THE CHEMIST AND DRUGGIST

TO CORRESPONDENTS.—Communication for the Editor should be addressed "To the Editor of tho "CHEMIST AND DRUGGIST," Colonial Buildings, 44, Cannon Street, aud if intended for insertion, should be Written *on one side of the paper only*, and authenticated by the real namo and address of tho writers, not necessarily for publication, but as a guarantoo of good faith.

Advertisements, Subscriptions, Orders for Copies, and all communications to be addressed to "**THE PUBLISHER.**"

REMITTANCES to be mado payablo to *Edward Halse;* and POST-OFFICE ORDERS payablo at Cannon Street Post Office, but to be addressed to "**THE PUBLISHER.**"

SCALE OF CHARGES FOR ADVERTISEMENTS.

One Page	£5 0 0
Half ditto	2 15 0
Quarter ditto	1 12 0

Special Rates for Wrapper, and the pages preceding and following literary matter.

The above Scale of Charges will be subject to a discount of 10 per cent. upon Six, and 20 per cent. upon Twelve insertions.

Seven Lines and under	0 4 6
Every additional Line	0 0 6

Advertisements of Assistants Wanting Situations (not exceeding 12 words) inserted at a nominal charge of 1s. each.

All Advertisements intended for insertion in the current Month must be sent to **THE PUBLISHER** on or before the 12th, except Employers' and Assistants' Advertisements, which can be received up to 10 a.m. on the morning previous to publication.

OUR COUNTRY AND COLONIAL SUBSCRIBERS are requested to furnish the Editor with any trade gossip that they may consider interesting.

Subscribers are requested to observe that, for the future, the receipt of THE CHEMIST AND DRUGGIST in a *Green Wrapper* indicates that with that number the term of subscription has expired, and that no further numbers will be sent until the same has boen renewed. We issue the notice very respectfully, not that we distrust our Subscribers, but simple because we find it impossible to keep an immense subscription list like that we now have, extending to almost every town in the world, in order without an exact system like this.

Editorial Notes.

WITH our next number we intend to issue a carefully-executed portrait of the

PRESIDENT OF THE PHARMACEUTICAL SOCIETY,

together with a brief biographical notice. This portrait, which will be lithographed by a new process, and printed on plate paper, will form the first of a series, and will be followed by portraits of Messrs. MORSON, STODDART, and DEANE, which, according to our present arrangements, will appear respectively in the numbers for May, August and November. As these works of art will greatly increase the permanent value of the year's volume, we have yielded to the solicitations of numerous subscribers, and have adopted a separate pagination for the literary matter, so that when bound, without the advertisements, the numbers of the pages will run on without breaks. The present issue, though it has suffered from the holiday-making of contributors, will show our readers that we are determined to spare no expense or trouble in the production of their special organ.

THE Co-operative Trading System may be defined as "arrested Socialism." It is the simplest manifestation of the Communism upon which SAINT SIMON, FOURIER, and ROBERT OWEN based their schemes of social regeneration. It is, in fact, the bugbear of French respectability disarmed, unbonneted, and stripped of its blouse. We would gladly forget its disreputable origin if we thought that it had lost all its old vices. Unfortunately, however, we have reason to know that the co-operative system and the general system of trade in this country are irreconcilable. While the former flourishes the latter must languish. Until we get the "new Christianity" of SAINT SIMON, the "new model world" of OWEN, or the "Phalanstères" of FOURIER, Socialism, even in the form of Co-operation, must be regarded as a rank weed which impoverishes the ground of legitimate trade, and chokes the life out of private enterprise. Pharmacists are probably the greatest sufferers from the extension of this system, for their charges necessarily involve remuneration for the exercise of special skill. As Mr. HANBURY justly remarks, "neither the safety of the public nor the well-being of pharmacy can be advanced by such a reduction of the price of medicines as the co-operative system would tend to introduce." The prices charged under this system reveal the lowest depths of trade-cutting. According to a correspondent of the *Pharmaceutical Journal*, any shilling article may be obtained at the Long Acre Stores for eightpence; a bottle of De Jongh's cod-liver oil for 1s. 10d.; an ounce bottle of Howard's citrate of iron and quinine for 1s. 8d.; and patent medicines and articles of perfumery at wholesale prices. This writer thinks it is high time for pharmacists to "be up and doing," and expresses the hope that "the agitation which has sprung up will result in a combined meeting of the trade, backed by some of the more influential members of the Pharmaceutical Society, to consider the matter in its entirety, and, if possible, suggest a remedy." If the wholesale houses would cease to supply the co-operative stores with goods, the trade of London would soon return to the proper channels. We understand that Messrs. MAW and Son have nobly broken their connection with the Civil Service Association because they considered that this Association was competing at an unfair advantage with their London customers, the retail chemists. It is to be hoped that the firms which supply the Association with Drugs and Patent Medicines will take the same course, or if not, that they will justify their connection with it, and so quiet the murmurs which we now hear on all sides. Mr. STARKIE has extricated himself from an unpleasant position in a highly creditable manner. In a letter addressed to the Editor of the *Pharmaceutical Journal*, he says: "I think it right to inform you that I have withdrawn from the Civil Service Co-operative Association. Some two or three years ago, their secretary offered me certain terms, which I viewed in the light of a contract, to serve Government officials, *bonâ fide*, and residing in my locality, with medicines at reduced prices. At that time I did not consider I was lending my support to a system calculated to injure that trade. I was not aware it would extend so far as it has, nor that it sought to undermine trade, as it appears to be doing at the present time, or I should never have had anything to do with it. I trust my brother Pharmaceutists will beleive me, when I say that I have not, nor ever had, a wish to take an unfair advantage of them in trade, or would seek to lower its standard for my own benefit." We think with the *Pharmaceutical Journal*, that this candid acknowledgment is likely to "produce an important influence on many of those who, like the writer, have been deluded by the representations made to them of the objects and probable effects of the co-operative system."

SCIENTIFIC pharmacists ought not to overlook Mr. SORBY'S valuable paper "On some Technical Applications of the Spectrum Microscope" contributed to the *Quarterly Journal of Microscopical Science*, and reprinted in the *Chemical News* during the past month (Nos. 524 to 527). The author shows that the spectrum microscope may be applied with advantage to the examination of wines and malt liquors and to the detection of adulteration in various substances used as food or medicine. By the methods described the pharmacist may easily detect the adulteration of ground mustard with turmeric, the adulteration of rhubarb with the same colouring agent or with gambogo, and the adulteration of saffron with the sliced petals of the yellow crocus. As small a quantity as 1-10th per cent. of turmeric may thus be detected in no more than 2½ grains of rhubarb, and there is no difficulty in distinguishing inferior pale rhubarbs which have been coloured to resemble those of the best quality. Small quantities of gamboge, added to increase the purgative action of these inferior kinds of rhubarb, may be detected even when turmeric is also present, but the operations involved in the investigation are necessarily rather delicate. The adulteration of saffron with the yellow crocus can be easily detected, even in a solution, by means of the remarkable spectrum of the latter when treated with certain reagents. Mr. SORBY shows that it is possible to distinguish the socotrine from the hæpatic aloes by means of the spectrum microscope, but he has not yet succeeded in discovering any satisfactory method for detecting the adulteration of the former with the latter. He also explains a simple method for detecting cochineal in tincture of roses. The paper opens a wide field for investigation.

THE Mineral Oil Association of London, with the assistance of their able chemist, Dr. B. H. PAUL, have been collecting and testing 75 samples of petroleum purchased promiscuously in various parts of the metropolis, and they have favoured us with a detailed report of their investigation. The results show, 1st, that one-half of the oil represented by these samples is petroleum "within the meaning of the Act;" 2ndly, that it gives off inflammable vapour at a temperature below that specified by the Act, as the minimum for ensuring safety in the stowage and sale of such oil; and, 3rdly, that there is still a very general and habitual disregard of the provisions of the Petroleum Act.

WE have received the following official notice with reference to armorial bearings:—"The Board of Inland Revenue do not insist upon payment for armorial bearings, or devices used by any person in trade, in connection with matters relating merely to his trade, as for instance, on bill-heads, trade labels, etc.; but any trade who uses such devices on paper for general correspondence, or otherwise, then its trade must pay the duty."

WE learn with great regret the death of Mr. RICHARD BOBBETT GILES, the father of the well-known pharmacist at Clifton. He had attained a good old age, and not only enjoyed the respect of all who with whom he was associated, but was singularly beloved. Few have been possessed of wider sympathies than he who has just gone to his reward.

HELP.

BY JOSEPH INCE.

MOST earnestly, on the opening of a new year, do we commend these thoughts to our brethren in Pharmacy. They are abstruse, and perhaps uninviting; but though the expositor be weak, the double truth presented is of the deepest importance to us all. A recent writer, with characteristic elegance of expression, has commented on a fable usually ascribed to Æsop, and from it has deduced a moral. These world-stories, which belong not to any particular author, but to universal literature, are capable of infinite explanation, and we venture to assert that "Hercules and the Countryman" forms no exception to the rule. A man was driving a cart, and one wheel stuck in a furrow. He appealed to the Divinity, who replied in a proverb that in various guises has been transmitted to modern times: "The Gods help those who help themselves." Some English versions quote as the motto, "*Put your shoulder to the wheel;*" the French adaptation of La Fontaine concludes with the celebrated adage, "Aide toi et le ciel t'aidera;" while Gabriel Faerne (Bubulcus et Hercules, date 1743) ends with the exhortation—

> "Vigilando, agendo, providendo quod possis
> Paratur è cœlo favor."

We believe this last to be the general meaning of the narrative, and knowing the value of French and Latin to the pharmacist, we reprint Faerne in another portion of this journal.

We can perform no more kindly act to our young friends than to induce them to read the marvellous unfolding of classical symbolic language which they will find in Lord Bacon's "Wisdom of the Ancients." The contents of that strangely-fascinating volume have been to us for years a source of perpetual delight.

Let us, without further preface, enter on this matter. The mythology of Greece and Rome was simply a method of descriptive writing. Jupiter *was* Omnipotence; Venus, Love; Minerva, Wisdom. The Gods and Goddesses eventually had statues, and this very fact confuses those who have let their school studies lapse. The statue was the mode in which the Greek or Roman sought to embody and tell others his ideas. In our day we should write an essay, and Trafalgar Square is sufficient evidence that the latter would be amongst our best chances of success.

We make no apology for the nature of these remarks. Without some understanding of their bearing, we shall often be at sea with regard to the legends of the past.

Hercules *was*, and meant Strength. The Farnese marble, familiar to us all, was a happy, visible description. A man with a waggon was placed in a dilemma—he wanted strength, and asked for more. He found, as millions before and after him have done, that strength lay in his own exertions. He discovered that by the act of striving, that which he vainly sought to get by adventitious means came, was made, and existed from that moment (a theory which originally was propounded by the editor of this periodical, and which we wrote out for him in a popular form). So far as the primary teaching of this Greek episode is concerned, the above is the lesson to be learnt.

Will the reader (should anyone be found content to travel over this most difficult road) kindly observe the phrase, "was made?" Force is thus created previously non-existent or dormant—it is hard to say which. New powers either spring into being, or are warmed into life. This underlies the character as well as the achievements of great men under all circumstances, and in whatever station the Providence of God has placed them. What is it, after all, more or other than the parable of the ten talents?

Are these observations romantic, or beyond the sphere of those, like ourselves, engaged in the drudgery of business? On the contrary, men working for their daily bread stand in need of such suggestions. Conduct is fate. Let us at once banish the delusion that no greatness can be recognised save that which secures a tombstone in the Abbey. The round of duty which presents itself either to Faraday or to the humblest apprentice may, with poetical exaggeration, be said to be his battle-field; and he who, hemmed in by narrow circumstances or mean position; weighted by family distress or harassed by unavoidable, unforseen misfortune, or afflicted with that worst of all calamities—uncertain health, and yet, in spite of obstacles, clears his way through into something better, *easier*, and happier, is a living illustration that God helps those who help themselves.

We dare not stop here, for there is an infinitely grander development of the subject which our admirable friend has failed necessarily to bring out of Æsop. He had to talk about reading Roscoe's "Elements," the "Bristol Association," and "Mutual Help." Hercules, as things go, did not exert himself too much; stayed in his cloud (all authors are agreed in this), and, if anything, was rude.

Seeing, then, that comparison was hopeless, the expedient was boldly adopted of that eminent minister of the Gospel, who, coming finally to address the wicked, said, "My beloved audience, we will now select a more appropriate text."

A proposal, therefore, is made to change the passage, and read, "God helps those who try to help themselves." Let us start fair with deprecating the author's wrath when we assert that we prefer a different interpretation. Much and solemnly as we hesitate to drag the words of inspiration into an argument, the matter would be incomplete and unintelligible without reference to the noblest of all philosophies—the "Scientia Scientiarum."

There is another and a higher Jove who in himself unites all the attributes of Divinity—he needs not to be surrounded by gods many and lords many, Dii Majores et Minores; but though omnipotent and omniscient, there is the startling fact, which Paganism never knew, that God *is* love.

Of this the theological bearings are so splendid that it is with sorrow they are here omitted. We, the children of the nineteenth century, are just so far truly men as we copy the example of Him in whose image we were formed.

Self-help is an undoubted verity, and mutual help a blessed thing. May the new year guide us into broader and loftier principles of action.

It is in the power of every created being to help his fellows—it is for each of us, not in a Quixotic, foolish manner, but in the pursuit of our ordinary avocations, to help even those who possibly may at first care little, if a straw, whether they are helped or not.

This is the history of our own Society, and the origin of full half the good effected in the world. This is the secret of the grand charities which are the glory of our age; of every public school and hospital; and, indeed, of all effort which has for its object the benefit of others.

From this doctrine spring minor but excellent virtues—the considerate mind, the accommodating spirit, and when the time comes, as it does to all, the thoughtful watchfulness over a neighbour's reputation. Æsop, you were a sage according to your light, but it was never dreamt of in your philosophy that another, stronger than your Hercules, should *go about* doing good—that there should be One to say, the whole have no need of a physician.

Surely there are some amongst us who think upon these things, many carry them out practically. Nor need we fear, inasmuch as Pharmacy is concerned, when we find not a few able and willing to convert abstract speculations into the realities of daily life.

THE RELATIONS OF PHARMACY AND CHEMISTRY.

BY DR. A. LACOTE.

THIS historical sketch is the introduction to the admirable Thesis by which Dr. Lacote recently gained admission to the Faculty of Medicine of Montpellier. We trust that we shall be permitted to print in these pages a translation of the entire work, which is an elaborate monograph on the Natural and Artificial Organic Bases or Alkaloïds, treating of their discovery, their general properties, their physiological actions and medicinal uses, the processes by which they are obtained, and the methods employed for their detection in cases of poisoning.*

Chemistry that science, at the present day, so beautiful, so profound, which incites men to the most sublime discoveries in the study of Nature, which explains facts formerly considered as impenetrable mysteries; that science which of all others descends most easily from the sphere of high theoretical speculation to apply itself to the material wants of man, first saw the light and developed itself in the very heart of the laboratories of the pharmacists.

The etymology of its name (from χυμὸς, the juice of plants) sufficiently indicates it; for it would never have taken its rise in pharmaceutical researches had it not been for the multiplicity of ingredients employed in ancient medicine, and the varied operations to which they were submitted.

Was not the search for a medicine endowed with miraculous properties—in one word, a universal panacea; the starting-point of that alchemy of the pharmacists and physicians which arose about the eighth century in Asia and Africa, which penetrated into Europe at the time of the Crusaders, and played a great part during the middle ages and the Renaissance?

The idea of the transmutation of metals only came to them later, and did not cause them to abandon the search for this medicine endowed with supernatural virtues. We could enter more fully into detail if this subject were not out of place here; but if the disciples of Hermes, as the alchemists were then called, found neither the philosopher's stone nor the universal panacea, it must be allowed that their labours did not result in pure loss. Sulphuric acid, nitric acid (discovered at Montpellier by Raymond Lully,) aqua regia, antimony, arsenic, zinc, phosphorus, ammonia, ether, porcelain; † in short, a number of metallurgic processes demonstrate what we have advanced. But in their immense labour, fruitful as it was, they were continually exposed to all sorts of tribulations, as though tainted with witchcraft.

These men—this race of dreamers, of madmen, of enthusiastic idealists, as they appear—to whom we owe these great discoveries, in searching out the hidden secrets of science, in walking out of the untrodden paths, first prepared, if they did not actually lay, the foundations of chemistry.

By what we have written we do not wish to represent the alchemists as blameless, nor their actions as worthy of being imitated. Far otherwise; for if unworthy juggleries sully these records, are they not like the base dross which accompanies the finest stones and the most precious metals in their natural resting-places?

In spite of the labours of Paracelsus, Alchemy continued its reign; in the meantime, its immediate disciples considerably increased the number of adepts in the *spagyric art* (from σπὰν and ἀγείρειν, to extract and to collect, *analysis* and *synthesis*), until the end of the eighteenth century; and as we approach this epoch, we see by degrees the vapours of Alchemy clearing off, and the dawn of true science brightening more and more. *Lux erit.*

Amongst the ardent workers in science at this period, we find Béguin, who discovered calomel; Glauber, who discovered hydrochloric acid, kermes, sulphate of sodium, etc.; Nicholas Lefebvre, founder of the teaching of chemistry

---

* *Des Bases Organique, naturelles et artificielles au point de vue chimique physologique et médical.* Par le Dr. Ate. Lacote, pharmacien de 1re classe, etc. Paris, 1869.

† To Botticher, an apothecary of Berlin, we are indebted for this discovery (1704-1710).

Lémery, the humble pharmacist of the Rue Galande, who gave lectures in his cellars which attracted hearers from all countries; Humbert, who found out boric acid; Klaproth, who created the art of imitating precious stones; the two Rouelles, the elder of whom was the master of Lavoisier; almost all of them pharmacists. And, lastly, Wenzel and Scheele, two eminent men, two true savants, who enjoy a posthumous glory. The first, a native of Dresden, fled from his father's house at the age of fifteen, wandered about Holland, and learnt pharmacy at Amsterdam. What became of him? What did he do? He died in 1793, director of the mines of Freyburg, and he had the honour of founding the first chairs of chemical philosophy. The other, born of poor parents, traversed Sweden, at twenty years of age, as a student of pharmacy. He was ill-appreciated at Stockholm, but was more fortunate at Upsal, where Bergman received him as a friend. Being too humble to solicit official places, he died manager of a pharmacy, in 1786, at the age of forty-four, leaving behind him work which is still the admiration of our men of science.

In this enumeration of pharmaceutical chemists, we must not silently pass over Bayeu, who, by his researches in the calcination of metals, ruined Stahl's ingenious fiction of the *phlogiston*, and prepared the soil even more effectually than Wenzel, for the great legislator of chemistry. For was it not immediately after the first communications of Bayen that the immortal Lavoisier, by his theory of oxidation, promulgated the law upon which actual chemistry principally rests. *Lux facta est.*

Among the pharmacists who were distinguished at the beginning of the nineteenth century for work of a general character may be mentioned—Descroizille, the originator of alkalimetry, chlorimetry, alcoholometry, etc.; Cadet; Chaptal, a statesman, and author of numerous chemical works; Proust, the fortunate rival of Berthollet; Vauquelin, who, from being a mere assistant in a laboratory, became director of the School of Pharmacy; Courtois, best known as a maker of saltpetre, who discovered the metalloïd iodine, without which the admirable discoveries of Niepce and Daguerre would never have seen the light.

And was it not to this generation of pharmaceutical chemists that our first Republic appealed when ammunition was wanting to drive back the enemy from our frontiers? All rushed to the work, and immediately created inexhaustible resources in sulphur, saltpetre, and bronze. Long and tedious processes were replaced by expeditious and convenient processes; and thus they furnished our soldiers with powder and arms, at the same time that they overlooked their march from the balloon at Fleurus. Later on, we see them, these same pharmaceutical chemists, in order to soften the hardships caused by the continental blockade, finding in our own fields what we had formerly asked from a foreign soil, so that in time they were able to supply indigo, soda,[*] sugar, and many other exotic products. Let us, then, exclaim, with the pharmacist Fourcroy, "The annals of the French Revolution will announce to the world all that the war of Liberty owes to the enlightenment and the resources of chemistry!"

"Organic chemistry, more varied in its products than mineral chemistry, more difficult in its problems, through the subtle play of its elements, the transmutability of its combinations, born but yesterday, and already so great; so full of all kinds of facts, is it not for the most part the work of the pharmaceutical chemists?" (Dumas.)

Here we shall stop, for we should fear being accused of flattery in speaking of our contemporaries. Only we would have it remarked, that the great question of the Organic Bases is almost entirely due to the labours of the pharmaceutical chemists, and that Derosne, Robiquet, Pelletier, and others by the discovery of the alkaloïds have given to medicine new arms of assured power which it brings to the work day by day.

CHLORAL.

BY PROFESSOR CHARLES A. JOY.[*]

THIS interesting compound was discovered in 1832, by Liebig, and was obtained by the action of chlorine upon absolute alcohol. The name is significant of its origin, and suggests at once the method of its manufacture. Chlorine alcohol [†] is abreviated to chloral, just as aldehyde is al(cohol) de(prived of) hyd(rogen). It is worthy of note that nearly simultaneously with Liebig's discovery of chloral in Germany was Guthrie's preparation of chloroform in the United States, and it is somewhat remarkable that, while the former is just coming into notice as an hypnotic agent, the latter has been employed since 1847 as an anæsthetic, and the present investigations upon it would not have been undertaken if it were not for its relations to chloroform. Although Liebig first prepared chloral, yet we are chiefly indebted to Dumas for a knowledge of its properties and constitution, just as we were for the best investigations upon chloroform. In order to understand how chloral can be made from alcohol, it would be well to write down the formulas of alcohol, aldehyde, etc., and then trace the decomposition that takes place:—

Alcohol	C_2H_6O
Aldehyde	C_2H_4O
Chloral	C_2HCl_3O
Chloroform	$C\ HCl_3$

When chlorine is passed through absolute alcohol, we can see, from the above table, how it takes the place of hydrogen, and forms hydrochloric acid. The reaction may be represented by the following formula:—

$$C_2H_6O + 8Cl = C_2HCl_3O + 5HCl.$$

The actual manufacture of chloral is attended with considerable difficulty and expense. It is necessary to pass well-dried chlorine gas through pure anhydrous alcohol for many hours, as long as it is absorbed, and to keep the vessel cool in the early stages of the operation; later, the temperature must be gradually raised until the liquid boils. If dilute alcohol be employed, instead of the anhydrous, no chloral is formed, but, in its stead, aldehyde, acetic acid, and hydrochloric acid; hence the necessity of using absolute alcohol. It is also difficult to prevent the formation of other compounds, especially chlorides of carbon, which serve to contaminate the chloral and render its administration dangerous. After the chlorine has been passed through sufficiently long, the crude product is mixed with three times its bulk of oil of vitriol and distilled at a gentle heat. It is sometimes necessary to repeat this operation several times, and finally to distil over quicklime. This is a long and tedious process, and it is not at all probable that it will be followed on a large scale should there be a demand for chloral in medicine. The action of chlorine upon bodies that yield alcohol by fermentation, such as starch, sugar, etc., will be tried, and even wood, after it has been treated with sulphuric acid, might afford it when acted upon by chlorine.

---

[*] We owe the manufacture of artificial soda to Dizé and Lablanc.

[*] Contributed to the American *Journal of Applied Chemistry*, and reprinted in the *Canadian Pharmaceutical Journal* for December, 1869.

[†] Or rather chlorine aldehyde, as it has the composition of aldehyde with three atoms of chlorine substituted for hydrogen. It cannot, however, be formed by the direct action of chlorine on aldehyde.—Ed. C. & D.

Professor Staedeler, formerly of Gottingen, now of Zurich, thought of the possibility of such a reaction, and actually succeeded in making chloral by distilling a mixture of one part of starch (or sugar) with seven parts of hydrochloric acid and three parts of peroxide of manganese; formic acid, carbonic acid, and other bodies accompanying it. Some of these latter methods may eventually prove successful, and thus enable us to obtain chloral at a cheap rate. At a recent meeting of the Chemical Society of Berlin, a pound of chloral hydrate was exhibited by two chemists, Martius and Mendelssohn, who stated that, with the co-operation of Dr. Liebreich, they had discovered a cheap and easy method for its preparation, but they refrained from giving the method because they had not finished their research. We also understand that the hydrate is offered for sale in Berlin for about a dollar gold, per ounce. As a dose only consists of a few grains, an ounce can be made to go a long way, and the price may be considered to be very moderate. We can hardly expect to procure it in this country for any such price until the demand for it has occasioned the discovery of cheap methods for its manufacture. We are sorry not to be able to give more definite hints in reference to a new way of preparing it, but we feel confident that our skilled pharmaceutists will soon be able to get on the right track.

We now propose to give an account of the properties of chloral. It is a limpid, oily, colourless liquid with a fatty taste, and a strong caustic smell, producing lachrymation. Its specific gravity is 1·502, and it boils at 95° C., and can be distilled unchanged. It mixes in all proportions with water, also with ether or alcohol. It dissolves sulphur, phosphorus, bromine and iodine, and combines directly with water to form a hydrate ($C_2HCl_3O.H_2O$). A little chloral put into a moist flask deposits star-shaped crystals of the hydrate on the sides. The aqueous solution of chloral is indifferent to vegetable colours; oxides of silver or mercury have no effect upon it. When the hydrate is heated with concentrated sulphuric acid, part of the chloral distils over in the anhydrous state while the rest is converted into a crystalline compound called chloralide.

One of the most remarkable properties of chloral is the change it undergoes spontaneously when kept; it is altered into a porcelain-like mass called metachloral, which is insoluble, though isomeric with the liquid form. It can be reconverted into chloral by distillation. The white metachloral is insoluble in alcohol and ether, as well as in water, but by contact with water it is gradually converted into the crystallised hydrate of chloral.

Fuming nitric acid changes chloral into tri-chloracetic acid. An alcoholic solution of potash converts chloral immediately into formiate of potash and chloroform. This reaction may be represented as follows :—

$$C_2HCl_3O + KHO = KCHO_2 + CHCl_3.$$

For pharmaceutical purposes chloral hydrate must form a hard, white crystalline mass, be completely soluble in water, not smell of chloride of carbon or hydrochloric acid, but retain the peculiar, penetrating odour characteristic of chloral. It would be dangerous to employ hydrate of chloral, contaminated chlorides of carbon and other incidental products, and hence great care must be observed in its preparation.

Much attention has recently been called to the hydrate of chloral in consequence of the physiological researches of Dr. Liebreich. This gentleman, in presenting his paper to the Chemical Society of Berlin, May 24, 1869, gave the following interesting explanation of the occasion of his research.

"There are some substances which pass through the body without decomposition and without exercising any appreciable influence on the even tenor of our life; there are others which go to build up and nourish; others take up something from the body by chemical decomposition and then leave it; some are useful, such as acetic acid and sugar. I experimented recently to ascertain if, by the splitting up of certain compounds in the body, the separated compound would exert the same influence it would if administered alone.

"Trichloracetic acid of Dumas and chloral of Liebig appeared to be the most favourable for experiment. It is known that these bodies when brought in contact with alkaline solutions split up into chloroform and formiates the carbonates of the alkalies. Both of these substances being soluble in water are easily absorbed; after they have passed into the circulation they come in contact with the alkali of the blood. My experiments proved that the formic acid and carbonic acid had no particular effect, while the chloroform exerted its full influence."

Dr. Liebreich reasoned that what took place outside the body in the chemist's laboratory ought to follow in the alembic of the stomach; but he preferred to bring his agents directly in contact with the blood by subcutaneous injections rather than wait for the action by the way of the stomach; although in some experiments he injected the compound into the stomach.

Some animals slept ten minutes after the application, and continued in this state for eighteen hours with quiet pulse and respiration. One man slept for sixteen hours without bad effects. The length of the action is explained on the theory of the gradual elimination of chloroform in the body, and its continuous effect upon the patient until the whole of it was decomposed.

Dr. Jacobi, a distinguished physician of New York, has repeated many of Dr. Liebreich's experiments with great success, and he recently read a very interesting paper on the subject before the New York County Medical Society, giving a detailed account of what he had done. On the other side of the question, we find in the *Medical Gazette*, of New York, so ably edited by Dr. A. L. Carroll, a translation of some experiments conducted by M. Demarquay and communicated to the Academy of France, from which the experimentor draws the following conclusions :—

"1. Chloral has a well-marked soporific effect upon debilitated and weak subjects.

"2. The duration of its action is in direct proportion to the weakness of the patient.

"3. The sleep provoked by it is generally calm, and is only disturbed in patients labouring under acute pains. This leads me to advise it in diseases where it is desired to procure sleep and muscular resolution.

"4. Finally, this agent may be given in quite large doses, as it has not caused any accidents in the dose of from one to five grammes."

Dr. Demarquay thinks that the chloral is eliminated through the lungs, and states that the breath of the patients smells of it; he does not agree with the theory of Liebreich, that it is split up into chloroform and formic acid in the blood, but admits that it is the most rapid of all soporifics.

Dr. Jules Worms arrives at the following conclusions after conducting a series of experiments with the hydrate of chloral:

1. Chloral dissolved in ten parts of water can be drank without any inconvenience to the amount of ten grammes.

2. Its effect is felt with 1½ to 2 grammes, but there are some obstinate cases which require a dose of 2 to 3 grammes.

3. A calm sleep, often profound, during which there is no modification in the temperature, in the regularity of the pulse or of the respiration, ensues in 10 or 15 minutes after the digestion of the chloral, and continues for seven or eight

hours. The waking is not accompanied by headache or nausea of any kind; there may be some dulness, but it is soon dissipated. It can be administered before or after meals, and exerts no influence upon digestion.

To sum up the experience of Dr. Worms, the hydrate of chloral appears to be an inoffensive agent in small doses, and may render important service as a hypnotic. In fact, the property which it possesses of determining sleep almost instantly is not possessed by any other agent than can be introduced internally. It possesses great advantages over opium and its derivatives in the rapidity of its action and the subsequent freedom from torpor and disagreeable sensations.

Trichloracetic acid was discovered by Dumas, in 1830, and was prepared by the action of chlorine on acetic acid. It crystallises in octahedra and delinquesces in the air. As this acid is decomposed by alkalies into carbonic acid and chloroform. Dr. Liebreich proposes to employ it as a substitute for chloral, but no account of his experiments is available to us at this present writing. If his reasoning were to hold good with this compound also, it would go far to sustain his theory in reference to the splitting up of chloral and the local action of chloroform. The whole subject is of great interest to physiologists and chemists, and may be the occasion of important discoveries.

The following extracts from the *Lancet* give the results of more recent investigations :—

Hydrate of Chloral in Italy.—Professor Namias, the well-known surgeon of Venice, has just addressed to one of the medical societies of that city a relation of his experiments with hydrate of chloral at the clinique of Venice. M. Namias has never observed the occurrence of eschars in hypodermic injections of the substance when only one gramme was injected with double the quantity of distilled water. The effects have always been speedy and excellent. They were especially so in one case of suborbitary neuralgia, and in various cases of muscular rheumatism, thoracic hyperæsthesia, in phthisical patients, etc. M. Namias ascribes these beneficial results to the good quality of the chloral prepared by Cioni. He has also tried the substance through the alimentary canal in doses of from eight to ten grammes a day, given in six or eight times, at intervals of two hours, and during several days consecutively. The effects were invariably excellent, and were unattended by arterial tension or undue frequency of pulse.

Amputation during Anæsthesia with Chloral.—Dr. Noir (of Brioude, France) has published, in the *Gazette des Hôpitaux* of December 29, 1869, the case of a man, aged sixty-four, suffering acutely from osteosarcoma of the leg. The patient was very anxious to have the limb taken off; and, as a trial, he took about sixty grains of chloral, dissolved in two ounces of simple syrup, at 8 a.m. Up to nine o'clock he frequently made efforts at vomiting, and had defective vision; after this came violent excitement, which lasted two hours; he then fell asleep, and soon was so insensible that he could be moved about without waking. This sleep lasted about an hour and a half, and the patient, on coming to his senses, said he felt very well, and asked for food. Pain had of late deprived him of sleep, and he was overjoyed to have had some rest.

Two days after this the man took seventy-five grains of chloral at eight in the morning, and was uncomfortable for two hours, when he fell into a deep slumber, and underwent amputation of the leg without moving or uttering a sound. After being placed in bed, the patient sank into an alarming coma for one hour; after which, on waking, he was seized with violent delirium and severe vomiting. These fearful symptoms lasted about seven hours, when the poor man passed into a state of complete prostration, and recovered his senses, but did not recollect anything of what had passed, and could hardly speak or move. He took some beef-tea, had a sleepless but quiet night, and the next day all the effects of the chloral had passed off.

Dr. Noir remarks that, in this case, delirium, prostration, and coma were so alarming that it would be imprudent to use chloral as an anæsthetic in operations if further experience prove that these dangerous symptoms regularly present themselves. There can, however, be no doubt, he adds, that insensibility was complete during the operation.

The readers of the Chemist and Druggist will remember that Mr. Daniel Hanbury, F.R.S., exhibited a specimen of chloral hydrate at the Exeter Meeting of the British Pharmaceutical Conference, and called attention to Dr. Liebreich's experiments.

ADDITIONS TO THE LIST OF POISONS.

THE following notice was printed in the *London Gazette* of December 21, 1869:—

The Pharmacy Act, 1868.—Poisons.

Whereas by section 2 of the "Pharmacy Act, 1868," it is enacted that the Council of the Pharmaceutical Society of Great Britain may from time to time, by resolution, declare that an article in such resolution named ought to be deemed a poison within the meaning of that Act, and thereupon the said Society shall submit the same for the approval of the Privy Council; and that, if such approval shall be given then such resolution and approval shall be advertised in the *London Gazette*; and that on the expiration of one month from such advertisement, the article named in such resolution shall be deemed to be a poison within the meaning of the said Act:

Notice is hereby given, that the Council of the Pharmaceutical Society of Great Britain did, on the 1st day of December, 1869, resolve and declare, in the words following :—

By virtue and in exercise of the powers vested in the Council of the Pharmaceutical Society of Great Britain, the said Council do hereby resolve and declare that each of the following articles; viz.:—

Preparations of prussic acid,
Preparations of cyanide of potassium and of all metallic cyanides,
Preparations of strychnine,
Preparations of atropine,
Preparations of corrosive sublimate,
Preparations of morphine,
Red oxide of mercury (commonly known as red precipitate of mercury),
Ammoniated mercury (commonly known as white precipitate of mercury),
Every compound containing any poison within the meaning of the "Pharmacy Act, 1868," when prepared or sold for the destruction of vermin,
The tincture and all vesicating liquid preparations of cantharides,—

ought to be deemed a poison within the meaning of the "Pharmacy Act, 1868,;" and also that of the same each of the following articles; viz.:—

Preparations of prussic acid,
Preparations of cyanide of potassium and of all metallic cyanides,
Preparations of strychnine,
Preparations of atropine,

—ought to be deemed a poison in the first part of the Schedule A to the said "Pharmacy Act, 1868."

And notice is hereby also given, that the said Society have submitted the said resolution for the approval of the Lords of her Majesty's Council, and that such approval has been given.

By order,
ELIAS BREMRIDGE,
Secretary and Registrar of the Pharmaceutical Society of Great Britain.

CHOICE EXTRACTS.

THE *British Medical Journal* makes the following indefinite note in a recent number:—

"A man of sixty-four, while under the influence of drink, went into a chemist's shop, and purchased fourpennyworth of laudanum. When he reached home, he drank it, and in the morning was found to be dead. The chemist admitted that no witness was present when he sold the opium: and that he made no entry of the sale in a book, as he should have done."

We must express our surprise at our able contemporary's reckless insinuation that a witness is needed when laudanum is sold by a chemist. The case is more fully reported in another column, where we reprint from the *Manchester Guardian* a letter of Mr. Baden Benger's, whose criticism of the coroner's remarks become even more forcible when applied to our contemporary, from whom better things might have been expected.

The following is from the *Pall Mall Gazette*:—

"Before Mr. Calcraft is superannuated, and capital punishment is abolished, it would be almost worth while to hang one or two druggists. The execution of a respectable tradesman, and possibly a vestryman, would, of course, be a painful affair, and cause some sensation, but there can be no doubt it would save many lives in the long run. As a general rule, people incur no great danger when they send a prescription to a chemist to have it "made up," the deadly effect of the draught is neutralized by the adulteration of the drugs with which it is compounded; but occasionally we fall into the hands of a conscientious or careless chemist, and then there is little or no hope for the sufferer. Two inquests are reported in yesterday's papers which tell their own tale, and a very sad one it is in each case. In one, an inquest was held on a child three weeks old. The child was ill and sleepless. The mother obtained a sleeping draught from the chemist and gave it to the child, who was sleepless no more—it fell asleep, never to wake again in a world of misery and muddle. A surgeon stated that the child died from congestion of the brain, accelerated by an overdose of narcotic poison. In the other case, a child ten weeks old was afflicted with a cough. A druggist's assistant sold to the mother some "stuff" in a bottle, desiring her to give the child twelve drops three or four times a day. At the end of the bottle the child was dead. The coroner said that he could not help thinking that poor people had no idea what a drop was, and if we may judge from the powerful effects produced on many of them by a drop of gin, the coroner's observation was probably correct. He added that it was surprising that druggists had no better sense than to give a medicine containing poison to be administered in drops. The jury returned an open verdict. Perhaps, if one or two druggists were taught by Mr. Calcraft the full meaning of the word "drop," they would be a little more careful in dispensing their drugs, and remember that when we ask for medicine, we do not wish our sufferings to be relieved by death."

We are not the defenders of blunders in any profession; but if we are to admit the principle of criminal punishment being dealt out for such, we shudder to think of the fate of the *Pall Mall Gazette* and its clever, but sometimes careless, contributors.

The following is a gem from the *Lancet*:—

"The Council of the Pharmaceutical Society have represented to the Board of Inland Revenue that it is desirable that the abolition of the patent medicine stamp and license should take place, such a step being entirely in accordance with the spirit of the Pharmacy Act of 1866. Will the Chancellor of the Exchequer feel disposed to give up more than half a million revenue a year from this source?"

We do not fully agree with the Council of the Pharmaceutical Society, but we have better reasons than the *Lancet* gives for our objections. As it happens that the revenue from this source amounts only to £66,000, the clever suggestion of our contemporary loses about ninety per cent. of its force. We can imagine the energy with which a poor druggist would be lashed in those columns if he should happen to make up a prescription with sixty grains of opium, when only six were ordered.

THE PRESERVATION OF MEAT.

ABOUT four years ago, in consequence of the increasing price and scarcity of meat, and of the danger incidental to bringing live animals, possibly affected with contagious diseases, to the roads and pastures of England, Professor Gamgee, formerly head of the new Veterinary College at Edinburgh, commenced a series of experiments with a view to determine the best method of preserving the flesh of animals for food. His early attempts, although attended with enough success to justify endeavours to improve the process first employed, were not altogether satisfactory. The intervening time has been devoted to the careful consideration of the several steps that had been taken, and to a steady continuance of practical researches in America. At last, however, Professor Gamgee has returned to England the possessor of a method of preservation that he is prepared to expose to all reasonable tests, and by which he expects at once to remove butchers' meat from the number of perishable commodities. In the introduction of a purely chemical process to the general fraternity of butchers Professor Gamgee has been materially aided by the Messrs. Bonser, of Newgate-market, who had the sagacity to perceive that imperishable meat would be of at least as much value in the ordinary course of the retail trade at home as to the business of the importer from abroad. By the help of Messrs. Bonser, a certain number of "preserved" carcasses were offered to the butchers for sale, and these were eagerly purchased, at a somewhat enhanced price. It may be presumed that customers made no complaint, for the butcher-purchasers unanimously "asked for more;" and since then a continuous supply has been thrown into the market, and has been sold with readiness. As far as regards colour and appearance there is very little, and as regards flavour and texture there is nothing, by which the preserved meat can be distinguished from that which has been slaughtered in the ordinary way; and the chief or only difference between them is that the former will keep good for periods varying from three to twelve months, according to the length of time during which it has been exposed to the gases employed. The necessary plant has been set up in the vicinity of Columbia-market, and the carcasses supplied by Messrs. Bonser are in the continuous process of treatment, so that colonists and others commercially interested may see all that is done and may learn how to carry the method into practice elsewhere. This week an Australian stock-breeder has taken away with him some preserved sheep, in order to try how they bear the packing and shaking incidental to ship transit, and to exhibit to his fellow-colonists the results that have been attained. If these carcasses reach Australia in good condition, it is not too much to hope that the problem of a meat supply thence will be solved, and that colonial breeders will next turn their attention to the quality of their stock, and will endeavour to produce animals equal in condition and flavour to those that now form the staple food of the better classes in England. The transit test is a severe one, and at present has been only applied for the much shorter voyage between England and America. On this trip no injury has been sustained, and it is fairly probable that careful packing will enable the meat to bear the Australian voyage, and to arrive not only undamaged but tempting in appearance. As far as can be foreseen at present, there is nothing in the condition of the ship's hold that will be likely to interfere with the preservative action of the process.

The chief agent employed is sulphurous acid; but in order to prevent this from flavouring the meat there is a preliminary exposure to carbonic oxide, by which the colouring matter of the blood and tissues is rendered able to resist the reducing or decomposing action of the acid. In the first place the animals are killed by being made to breathe carbonic oxide, that is, by a process analogous to the administration of chloroform. Insensibility is quickly produced, and then the animal is bled, and the carcase dressed in the ordinary way. In a temperate climate it is left to cool and set spontaneously; but in a hot climate an artificial process of refrigeration is required. By this the carcase is reduced to about 50 degrees Fahrenheit; and it is then placed in an air-tight chamber, in which an atmosphere of mixed carbonic oxide and nitrogen is driven by a blower. In this chamber there is also a wooden case, containing charcoal, charged with sulphurous acid; and after the carcasses have been for a certain period exposed to carbonic oxide and nitrogen alone, the lid of the case is drawn off by a thong passing through a stuffing box, and the charcoal gradually gives off its acid to the meat. The chamber is left undisturbed for seven or eight days in the case of sheep, ten days for pigs, and eighteen or twenty for bullocks. After this the door is opened, and the meat is taken out ready to be stored or packed. In hot climates not only do the carcasses require to be cooled at first, but a stream of cold brine from a refrigerator is kept flowing over the chambers during the whole of the process.

The expense of the plant and method is inconsiderable. In addition to the butchers required to kill and dress the animals, the largest establishment would only need one man to drive the refrigerating machine and blower, and one to attend to the charging of the charcoal. In England the cost of preserving amounts to two or three pence for a sheep, and to about a shilling for a bullock.—*Times.*

Pharmaceutical Society of Great Britain.

EVENING MEETING, WEDNESDAY, JAN. 5, 1870.

MR. HASELDEN IN THE CHAIR.

THE usual preliminary business having been transacted,

Professor **Redwood** proceeded to make some remarks, introductory to the discussion on his Notes on the Pharmacopœia, which had been adjourned from the last meeting. The Professor accounted for his present freedom in discussing publicly the merits of the Pharmacopœia, by the statement that the Medical Council, so far from wishing to protect the Pharmacopœia from that liberal criticism which, having free expression, might conduce to its gradually assuming a more perfect form, were anxious that such discussions should have every possible freedom and attention. The responsibility of such a body as the Pharmaceutical Society was therefore great. Professor Redwood felt sure that the discussion would be of such a nature as to elucidate many important facts, and yet would not unduly weaken the authority of the Pharmacopœia. He said, we owe allegiance to the Pharmacopœia, and must be loyal to it. Yet the Pharmacopœia has its faults, although we must not magnify these so as to impress those who are inclined to deviate from its instructions. Our present object must be to ascertain the desirability of making any alterations, so as to improve the Pharmacopœia without disagreeing about small matters. Before the Pharmacopœia was printed off, copies were sent to the members of the Medical Council and to eminent pharmaceutists, and much difference of opinion was shown, which fact should make us careful. The Pharmacopœia can never be made perfect, although we must endeavour to make it as much so as possible. Unnecessary changes are specially to be avoided; it is generally felt that no change should be made on slight grounds, and great judgment should be exercised in determining those which are to be made. Some persons think that unless a special test is given for the detection of an impurity, such impurity may be admitted. The insertion of such matters would make the work unnecessarily cumbrous; their absence must be made up for by the exercise of a little rational spirit. Professor Redwood considered that no such work had been brought so full of detail; he was almost afraid that too great profusion in such details had been exercised, as some expected to be able to work blindly by following the instructions without the exercise of thought. But the work must be used with a rational intelligence, founded on previous experience.

In reference to *Linimentum Iodidi cum Sapone*, much argument had prevailed, and several amended formulæ had been recommended. Mr. Deane's researches had shown that good ointment might be made without the use of soft soap, and without departing from the Pharmacopœia. Dr. Redwood would propose a slight alteration: instead of using 1½ oz. of soap, he would use 1 oz. of soap and ½oz. of impure palmitate of soda.

Mr. **Umney** made some remarks on *Liquor Magnesiæ Carbonatis.* He thought that even the reduced strength recommended by Dr. Redwood was too high. The carbonic acid should also be directed to be *forced* into the solution; and Mr. Umney would recommend this to be accomplished at a pressure of three atmospheres. Mr. Umney had examined many samples of *Liquor Magnesiæ Carbonatis*, and had found the variation amongst them to be very great.

Professor **Attfield** contributed a table showing the strength of seven different specimens of fluid magnesia, obtained in the ordinary way, and selected so as to represent the products of the six chief makers of this preparation. The amount of salt dissolved, the amount deposited in crystals in the bottle or jar, and the total amount per fluid ounce before any deposition occurred, were given in the table. The figures showed that if much more than 9 grs. of carbonate of magnesia be dissolved in 1 oz., a portion of the salt will be deposited sooner or later.

The conclusion which is indicated by the results of these analyses is, that if *Liquor Magnesiæ Carbonatis* be made by dissolving 8 grs. of carbonate of magnesia in 1 fluid ounce of water (by aid of carbonic acid), the solution will probably be stable. A stronger solution is liable to become weak by deposition of crystals within the containing vessel.

Mr. **Carteighe** thought Dr. Redwood's suggestion was the right one. The question of keeping does not alone depend on the amount of carbonic acid dissolved—the time during which the carbonate of magnesia is kept in contact with the carbonic acid has great influence. The weather has a great influence. Mr. Carteighe did not think it was practicable to make a solution containing 10 grs. to the ounce which would keep.

Mr. **Martindale** thought it was only necessary in the preparation of *Linimentum Iodidi cum Sapone,* to mix the ingredients at equal temperatures.

Mr. **Carteighe** thought the difficulty lay in the meaning of the term jelly. It would be very desirable to adopt the late recommendation to use soft soap—at least half the proportion, if not all.

Mr. C. H. **Wood** questioned the advisability of adopting Dr. Redwood's recommendations in reference to the weighing of quinia in testing Cinchona bark. The first difficulty was in precipitating with ammonia; unless precautions are taken, the precipitate always contains a notable quantity of sulphuric acid which cannot be washed out. If precautions are adopted, consisting in the use of plenty of water and ammonia, the large quantity of water used dissolves a portion of the quinia. To dry the hydrate so precipitated, it is necessary to heat it to 250° F. By the use of the Pharmacopœia method, these difficulties are not met with.

Mr. **Bland** made some remarks, which were drowned by the confusion attending the display made by some members who were anxious to depart. The discussion will be resumed at the next meeting.

MEETING OF THE COUNCIL,

*December 1st, 1869.**

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

Present — Messrs. Bottle, Bourdas, Brady, Carteighe, Deane, Dymond, Edwards, Haseldon, Hills, Mackay, Morson, Randall, Sandford, Savage, Squire, Stoddart, and Williams.

The minutes of the last meeting were read and confirmed.

The Report of the Finance and House Committee was presented, showing on the General Fund Account a balance in the Treasurer's hands of £1,001 7s. 2d., and submitting for payment accounts, and various items, amounting to £799 13s. 11d.; and on the Benevolent Fund Account a balance of £411 5s. 4d.

Resolved—That the Report be received and adopted, and payments made.

The Committee reported that they had estimated the receipts for the month of December, and had ascertained that a larger balance than would be required would be in hand at the end of the year, whereupon it was

Resolved—That the Treasurer be requested to purchase £2,000 Stock, New 3 per Cents., to the General Fund Account.

On the further report and recommendation of the Committee, it was

Resolved—That 1,700 copies of the Register for 1870 be printed, and published at 5s. per copy. That a Calendar of the Society for the year 1870 be prepared, and published at 1s. per copy.

It was moved by Mr. Deane, seconded by Mr. Squire,

Resolved—That the House and Finance Committee be requested to examine the applications for the office of Collector, and report to the Council thereon.

The Report and proceedings of the Library, Museum, and Laboratory Committee were read.

With reference to the additional accommodation required in the Laboratory, the Committee submitted a plan by which a sufficient number of benches might be provided, and a certain portion of the Laboratory partitioned off for the use of students pursuing quantitative analysis. Estimates for the work were submitted, and the Council

Resolved—That the consideration of those estimates be again referred to the Laboratory Sub-Committee with power to carry out the proposed work, or any modification thereof, which they may deem desirable or necessary.

The following, being duly registered as Pharmaceutical Chemists, were severally granted a Diploma, stamped with the seal of the Society:—

Brady, Alfred, Newcastle-on-Tyne.
Smith, Walter Henry, London.
Spear, Robert, London.
Ward, John Slinger, Stockton-on-Tees.
Warrior, Charles, Northallerton.

The undermentioned Pharmaceutical Chemist was elected a—

MEMBER.

Hill, William Gardner, Edinburgh.

The following Chemists and Druggists, registered under the "Pharmacy Act, 1868," were elected—

MEMBERS.

Berry, William, Bristol.
Dobson, James, Runcorn.
Harker, James Hall, Rainhill.

PROPOSED REGULATIONS FOR THE KEEPING AND DISPENSING OF POISONS.

The Council proceeded to the further consideration of these regulations; some verbal alterations having been made, on the motion of Mr. Mackay, seconded by Mr. Sandford, it was

Resolved—That the Regulations as to the keeping and dispensing of poisons now laid before the Council and agreed to, be submitted for confirmation to a General Meeting of the Society.

In consideration of the desirability of having a full meeting of the Members of the Society for discussing this question, it was decided that it should be submitted to the General Annual Meeting in May next.

REGULATIONS.

By virtue and in exercise of all powers and authorities in this behalf, the Pharmaceutical Society of Great Britain do hereby resolve and prescribe that from and after the , the following shall, within the meaning of the Pharmacy Act, 1868, be regulations as to the keeping, dispensing, and selling of poisons, *videlicet*—

1. In the keeping of poisons, each poison shall be kept in a box, bottle, vessel, or package, distinctly labelled with the name of the article, and the word *Poison*.

2. In the keeping of poisons, one or more of the following systems shall be used:—

I. The boxes, bottles, vessels, or packages containing poison shall be kept apart from other boxes, bottles, vessels, or packages, and shall be so kept in an apartment, cupboard, compartment, or drawer, set apart for dangerous articles.

II. The bottles or vessels used in any shop or dispensary to contain poison shall be distinguishable to the touch, as by being angular, fluted, or corrugated, and shall be unlike the bottles or vessels used to contain articles which are *not* poisonous or dangerous, in the same shop or dispensary.

III. The bottles or vessels used in any shop or dispensary to contain poison shall be tied over, capped, or secured in a manner distinguishable from the way in which any bottles or vessels not used to contain poisonous or dangerous articles used in the same shop or dispensary may be tied over, capped, or secured.

3. In dispensing and compounding poisons, all liniments, embrocations, and lotions containing them shall be put into distinctive bottles, or bottles made distinctive; and labels, containing some word or words of caution, showing that the contents are not intended to be taken, in addition to the name of the compound or instructions for use, shall be affixed thereto.

ADDITIONS TO THE SCHEDULE OF POISONS.

It was moved by Mr. Sandford, seconded by Mr. Deane,

Resolved—That by virtue and in exercise of the powers vested in the Council of the Pharmaceutical Society of Great Britain, the said Council do hereby resolve and declare that each of the following articles, *videlicet*—

Preparations of prussic acid,
Preparations of cyanide of potassium and all metallic cyanides,
Preparations of strychnine,
Preparations of atropine,
Preparations of corrosive sublimate,
Preparations of morphine,
Red oxide of mercury (commonly known as red precipitate of mercury),
Ammoniated mercury (commonly known as white precipitate of mercury),
Every compound containing any poison within the meaning of the "Pharmacy Act, 1868," when prepared or sold for the destruction of vermin,
The tincture and all vesicating liquid preparations of cantharides

—ought to be deemed a poison within the meaning of the "Pharmacy Act, 1868;" and also that of the same each of the following articles, *videlicet*—

Preparations of prussic acid,
Preparations of cyanide of potassium and of all metallic cyanides,
Preparations of strychnine,
Preparations of atropine

—ought to be deemed a poison in the first part of the Schedule A to the said "Pharmacy Act, 1868."

Moved by Mr. Brady, seconded by Mr. Williams—

That the Board of Inland Revenue be informed that this Council is strongly in favour of the abolition of the patent medicine stamp and licence, and would regard such a step as conducive to the best interests of the public, and the proper carrying-out of the provisions of the "Pharmacy Act, 1868."

---

* From the *Pharmaceutical Journal*.

Amendment: Moved by Mr. Savage, seconded by Mr. Edwards—

That in the opinion of this Council it is undesirable that further steps in connection with the abolition of the stamp duty should be taken at the present time.

For the Amendment,—Messrs. Bottle, Deane, Edwards, Haselden, Randall, Sandford, and Savage.

Against,—Messrs. Bourdas, Brady, Carteighe, Dymond, Hills, Mackay, Morson, and Williams.

The Amendment was, therefore, lost.

The original motion was then put.

For,—Messrs. Bourdas, Brady, Carteighe, Evans, Mackay, Morson, and Williams.

Against,—Messrs. Bottle, Deane, Edwards, Haselden, Randall, and Savage.

It was moved by Mr. Sandford, seconded by Mr. Deane—

That in the event of the Board of Inland Revenue declining to remove the stamp duty and licence on the sale of patent medicines, this Council recommend the charge for licence be equalized—that all vendors shall hereafter pay ten shillings per annum.

For,—Messrs. Deane, Edwards, Mackay, Sandford, and Savage.

Against,—Messrs. Bottle, Bourdas, Brady, Carteighe, Haselden, Randall, and Williams.

The motion was, therefore, lost.

On the Report and recommendation of the Parliamentary Committee, and after due consideration, the Council ordered the following names, now on the Register of Chemists and Druggists, to be erased therefrom.

William Love Elliott.
Josiah Rigby.
Edward Castledine.
John Cundy.
John Seaman.
John Tustian.
Joseph Cluse Stackhouse.

Moved by Mr. Savage, seconded by Mr. Brady—

Resolved—That authority be hereby given and confirmed to Mr. Elias Bremridge, the Registrar appointed under the statute 15 & 16 Vict., cap. 56, intituled "An Act for Regulating the Qualifications of Pharmaceutical Chemists," from time to time, and at all times to recover, in the name of the Council of the Pharmaceutical Society of Great Britain, or the said Society, all penalties which have been incurred, or which may be incurred under the said statute, 15 & 16 Vict., cap. 56, and also all penalties which have been incurred, or may be incurred under the Pharmacy Act, 1868.

The seal of the Society was affixed to the resolution.

Abstracts of Foreign Papers.

CHLORAL.

FORMULÆ for several preparations of chloral are given by *L'Union Pharmaceutique*. It uses the term chloral as significant of *hydrate of chloral*. The great solubility of chloral in water renders the method of its administration very simple. We give the formulæ in their original form; for an educated pharmaceutist of the present day it should not be necessary to translate such formulæ into their English equivalents. *L'Union Pharmaceutique* proposes the following syrup of chloral:—

Hydrate of Chloral	10	grammes.
Distilled Water	10	"
Simple Syrup *	980	"

Dissolve the chloral in the water and mix the solution with the syrup. This syrup is of a sweet, agreeable taste, and has an odour of both chloral and chloroform. The odour of chloroform depends on the decomposition of a small portion of the chloral, owing to the presence of a little lime in the sugar.

Dr. Liebreich recommends the following formulæ:—

I.

Hydrate of Chloral	2·28	grammes.
Mucilage of Gum Arabic ...	15	"
Distilled Water	15	"

Mix, and administer in one dose.

II.

Hydrate of Chloral	3·72	grammes.
Orange Syrup	15	"
Distilled Water	15	"

A spoonful of the mixture at bed-time

III.

Sedative Potion.

Hydrate of Chloral	1·80	grammes.
Orange Syrup	48	"
Mucilage of Gum Arabic ...	48	"
Distilled Water	120	"

A spoonful of the mixture every hour.

MM. Dieulafoy and Krishaber have published some notes in reference to the action of chloral, of which we extract the following:—

1st. In small doses chloral acts as a stimulant; in large doses sensibility is gradually diminished until complete anæsthesia is produced.

3rd. Animals completely subjected to such anæsthesia may remain so several hours; after this period they almost invariably succumb.

5th. Chloral has a great effect on the movements of the heart; the temperature is notably diminished.

6th. The phenomena attending the action of chloroform are in many respects different from the phenomena produced by chloroform, although the anæsthesia is equal to both cases.

In effect, rabbits treated with doses exceeding 2½ grammes were always thereby brought under the influence of anæsthesia; treated with more than 3½ grammes, they were killed. A dose of less than 1½ gramme simply induced sleep, whilst an effect was produced with doses below 6-10ths of a gramme.

M. Ferrand, recognising the resemblance between the history of chloral and that of chloroform, hopes that the comparison will not long continue to hold good. He wished, in the first place, to point out its faults; and, in the second place, to demonstrate its virtues by seeking to combine the somewhat contradictory statements of those who first experimented with it. In reference to its manufacture, the author points out that the manipulation is not without difficulty, even peril; if the current of chlorine is not properly managed at the commencement of the operation inflammation may occur, or even spontaneous explosion. Difficulties are also to be met with in rectifying over lime. The author would prefer to prepare the hydrate of chloral directly, by cooling the ultimate product of the current of chlorine to the freezing point of water, to apply pressure to the solid mass thus produced, until it no longer greases the paper, and then finally to distil over a small quantity of pulverized chalk; a very good product is then obtained. The author questions the stability of chloral, and therefore questions the advisability of placing confidence in the definite character of its results. He had observed a sample of chloral which had become so changed in character as to be no longer soluble in water; and another which exhibited the presence of iodine by the blue colouration on paper, which covered the mouth of the flask. The author considers himself sufficiently authorised in bringing this matter prominently forward, inasmuch as Dumas has recently avowed the great difficulties he had encountered to determine the composition of this body. In estimating the physiological action of chloral we should consider the slow and continuous production of chloroform, effected by the feeble alkalinity of the blood, when we account for the light and durable nature of the sleep produced by small doses. Indeed, may it not be the same with the larger doses which produce anæsthesia; because the latter, when not of a very ephemeral nature, is slow to produce, and long in being dissipated; and with animals is sometimes so prolonged as to end in death. In all cases hydrate of chloral is in small doses a powerful sedative of the nervous system, motive and sensitive; but care should be taken against large doses, and against impurities, either native or those produced by the instability of chloral itself.

---

* Paris Codex.

Sidney W. Rich.

Therapeutics.

MODERN THERAPEUTICS

REVIEWING the past year, the *British Medical Journal* says:—"In the domain of Therapeutics, we have certainly lost no ground to the homœopathist. Various old and doubtful remedies have fallen, it is true, into merited disrepute. Our shelves have fewer bottles; but we decant from them most liberally, and to many of them we trust with a confidence which far excels that of our fathers in spirit of Mindererus and Griffith's mixture. We are gradually substituting arms of precision for the old blunderbuss. More iodide of potassium has probably been swallowed during the last year than in any corresponding period; and, amongst the results, we may boast the disappearance of radesyge in Norway, of yaws in our West Indian colonies, and of most of the severe forms of tertiary syphilis at home. Arsenic holds its ground—probably gains more. Mercury may perhaps have a little diminished in quantity, but has been directed with better aim. Belladonna and digitalis as specifics, where needed, still enjoy the unbounded confidence of those who know when to prescribe them. Of quinine, steel, and the rest of the unharmful tonics, it is needless to speak. Amongst remedies which are nearly novel, we might mention the use of Calabar bean for tetanus, though it is perhaps too early to speak with confidence. We have left the best till last. The bromide of potassium is, we are told, now manufactured, in England alone, for medicinal use, at the rate of a ton a week. Part of this is exported to America, where the consumption is even greater than with us; but the greater portion is for home use. This marvellous salt appears to possess sterling virtues and no vices, and to be adapted to the control of precisely those forms of nervous disease which are common in high states of civilisation. Many of these are of the most distressing character, and appear to be influenced for good in the most undoubted manner by this remarkable drug. Many facts respecting it still wait investigation; but as yet it is gaining repute in all directions."

BICHLORIDE OF METHYLENE AS AN ANÆSTHETIC.

We are indebted to the same journal for the following abstract of a paper by Mr. Philip Miall, surgeon to the Bradford Infirmary, giving an account of one hundred cases of the use of bichloride of methylene as an anæsthetic:—

The author commonly uses the cylinder introduced by Mr. Peter Marshall. Most of the administrations were for operations on the eye; but it was used also for amputation of the thigh and leg, and removal of the breast.

Insensibility in adults is generally produced in from two to five minutes; the average being 3 minutes 20 seconds; the minimum, 1¼ minute; the maximum 5 minutes.

One dose of a drachm was generally sufficient to produce anæsthesia. In females, less than this will suffice. More than a drachm and a half was never found necessary to produce the first insensibility. The maximum quantity required before the completion of an operation was three drachms and a half.

The author proceeds to compare these results with those from the administration of chloroform. The average time taken to produce full anæsthesia was: in

Men—3 minutes 20 seconds with bichloride of methylene.
6 minutes 20 seconds with chloroform.
Women—2 minutes 22 seconds with bichloride of methylene.
4 minutes 18 seconds with chloroform.
Children—1 minute 16 seconds with bichloride of methylene.
2 minutes 24 seconds with chloroform.

The quantity of chloroform required was about double that of the bichloride of methylene. The duration of insensibility after removal of the inhaler was not found to vary with sex and age, as the time of the invasion was. It was not uncommon to find the patient completely conscious and walking away in less than three minutes after the commencement of inhalation.

Vomiting occurred forty-two times out of ninety-seven; nausea merely, six times. Vomiting did not occur once before anæsthesia was complete. The author thinks that the use of the bichloride is not likely to be much more free from consequent vomiting than chloroform.

The pulse was unaltered in 4 cases, quickened in 9, and lessened in frequency in 23.

The respiration was nearly always quickened. In five cases in which the respiration gave warning of impending danger, prompt measures were successful in restoring the patient.

The author is satisfied as to the safety of this anæsthetic, and thinks it is easily managed with average precautions. It is important to exclude rather than to admit air. The apparatus should be well applied to the face. In small operations, it is decidedly preferable to chloroform, and for larger ones quite as useful.

PROTOXIDE OF NITROGEN AS AN ANÆSTHETIC.

M. Jeannel, the distinguished Professor of Pharmacy and Materia Medica of Bordeaux, has just brought forward a valuable memoir on the subject of protoxide of nitrogen. The author's conclusions are thus noticed by the Paris correspondent of the *Lancet*:—

1. The purified gas, such as is employed at present, does not produce those exhilarating effects which have been described by authors of the commencement of this century.

2. Anæsthesia produced by protoxide of nitrogen is not so complete as that brought on by chloroform; but it differs essentially therefrom by the rapidity of invasion, the absence of excitement at the outset, and the facility with which one returns to the normal condition. It produces also a more decided kind of asphyxia.

3. It is of convenient application to operations of a short duration; and it is probable that the agent may be applied to the more important surgical operations, by preserving a suitable interval between the inhalations.

4. We are justified in saying that protoxide of nitrogen exposes less than chloroform to a fatal accident, but it certainly does exert such an action; it therefore should be exclusively kept in reserve for operations where peril is increased by pain. The use of the gas should be practised with all suitable guarantee and scientific precaution.

5. Protoxide of nitrogen is of less convenient employment than the fluid anæsthetics, on account of the apparatus which it necessitates.

THE MEDICINAL EMPLOYMENT OF ARSENIC.

According to the *Lancet*, Dr. Devergie, a well-appreciated dermatologist of Paris, states that some confusion now exists among the different arsenical compounds, and thinks we should confine our prescriptions to Fowler's solution. He considers eighteen drops as the maximum dose, which should, however, be reached gradually. Dr. Devergie also holds that the arsenic should be given fasting, and not with the food, as in the latter case the action of the remedy is interfered with, and we do not know how far it is being absorbed.

Veterinary Notes.

BY W. HUNTING, M.R.C.V.S.

MILK FEVER IN COWS.

THIS very fatal malady is known in some parts of the country as "dropping after calving," and amongst veterinarians as "parturient apoplexy."

The nature and causes of milk fever still give rise to different opinions. I will first refer to its chief features, and then point out what I consider its correct pathology.

It is a disease essentially peculiar to milk cows, and occurring always about the time of calving; it may appear in the course of a few hours, or not for a week after, the average time being the third day. It never follows abortion or retention of the placenta, and very rarely a difficult calving. It is seldom, if ever, seen in a bad milker, or in a young animal. The best conditioned (plethoric) animals and heaviest milkers are the most likely victims, and that at the third or fourth calving. It occurs after an easy parturition, more frequently in hot than cold weather, and shows no partiality as to breeds. It is not contagious or infectious, and in this particular differs from the parturient fever of the human species. A cow once attacked is nearly certain to be again affected at the next calving. A case occurred in my father's practice of an animal dying after five consecutive attacks.

One may gather from the above facts that gestation is a condition indispensable to the development of the malady, and that plethora is the great predisposing cause, though insufficient of itself to produce it without the concurrence of some special condition of the economy as yet not understood.

It is noticeable in a large veterinary practice that a number of these cases generally occur about the same time, and that whilst you have a number in one half-year, neighbouring practitioners are often free, and *vice versâ*. It is remarkable, too, that it is more fatal some seasons than others. As a rule, the milk fever is an affection of the nervous centres, accompanied by functional derangement of various organs; sometimes by inflammation of the womb. This latter disease may occur after a difficult parturition, without any head symptoms.

Symptoms.—The premonitory symptoms are few, and may be overlooked; they soon pass on.

Any unusual change after calving is suspicious, but none so indicative as suppression of the secretion of milk. With this we have arrested rumination and appetite, a glassy, staring eye, hot horns and ears, and cold extremities. The animal is uneasy, frequently shakes its head, and if made to walk does so in a very unsteady manner. The pulse is full and strong, and the bowels invariably constipated. This is the first stage.

Next we find the eye becoming insensible to light; the animal falls, and either lies in a dull, sleepy way, with the head thrown round on the shoulder, or keeps wildly dashing it from side to side. The pulse becomes quicker and weaker, and the breathing slow, heavy, and stertorous. As the insensibility or coma increases, we have paralysis of the muscles used in swallowing, and frequently hoven or distension of the large stomach by gas.

A *post-mortem* examination reveals no structural change in the abdominal organs; generally a certain amount of congestion of the lungs, especially marked on the side the animal has lain. In most cases, we find small coagula and serous effusions on the brain and spinal cord; though I must say that occasionally an examination reveals no lesion whatever, in which cases death resulted from the intensity of the *fever*.

This last condition has led some veterinarians to believe the disease due to a morbific matter in the blood. But such an explanation will not tally with the lesions found in most cases, or with the early appearance of cerebral symptoms; neither can I reconcile the acknowledged success of bleeding in the early stages, with the presence of a blood-poison.

I believe plethora, or a previous attack, to be the great predisposing causes. Still we have many plethoric cows escape; so we are driven to acknowledge some peculiar susceptible state of the system as a requisite. This granted, further explanation is pretty clear. During gestation, a large quantity of blood is determined to the uterus for the wants of the fœtus. After parturition, this quantity is directed to the udder for the elaboration of milk; but should this natural change be interfered with, the extra quantity thrown back into the circulation produces congestion of the weakest organ.

In every case of milk fever we find the secretion of milk arrested at the commencement. It is a fact that any organ or set of organs, when in a state of excitation, is more prone to take a disease than otherwise. At the time of calving, the brain and spinal cord are specially excited, and thus these organs become less able to withstand any extra determination of blood. It is true the uterus is also excited, and we not uncommonly have it attacked. Probably the relative excitability of nervous system and uterus may determine whether we have milk fever or inflammation of womb.

Treatment.—In describing the symptoms, we spoke of two stages—one in which the animal stands, another in which it lies insensible. The treatment in one important particular differs with these situations. In the comatose state, bleeding is injurious; whilst experience proves it to be the most valuable agent, if resorted to before the animal falls. It is not so much the quantity as the impression made on the heart which guides us in stopping the vein. This impression on the heart is easiest made by a rapid abstraction of blood. A skilful operator achieves this by opening both jugulars at once, compressing the veins by means of a rope round the neck.

The rest of our treatment must be guided by the symptoms and pathology of the disease. We apply cold water or ice to the head and neck to constrict the vessels, and thus reduce the influx of blood to those parts. Wrap up the body and legs with rugs, etc., to determine blood to the skin and extremities. Draw the udder gently every four hours to remove any milk, and gently hand-rub it to facilitate return of its proper blood supply.

The inveterate constipation we treat with purgatives and stimulants. Doses must be increased; but remember it is not so much a mechanical impediment we have to remove, as defective nervous power which we must rouse. Give

Magnes. sulph.	16 oz.
Sulphur	2 ,,
Aloes	2 ,,
Ginger	2 ,,

in at least four quarts of thin gruel.

Should this not act in six or eight hours, repeat half the dose; or give

Linseed oil . . .	1½ pint.
Croton oil . . .	30 or 40 drops.

Diffusible stimulants, as sulphuric ether or ammonia, are valuable, given every eight hours or so; but what seems most successful is two-drachm doses of ammon. carb., every three or four hours.

Injections of warm water into the rectum must not be forgotten, and the bladder must be examined, as in the comatose state it is not naturally emptied. If full, we pass a catheter, which need not be repeated more than once a day.

All medicines should be given in a good bulk of fluid, and as the muscles of deglutition are more or less paralysed, there is risk of some passing into the windpipe, it is always expedient to administer drinks through a tube (probang) passed into the gullet. General comfort must be attended to. A good bed, or, better still, a loose box, saves the animal many blows in its struggles; the head should be fixed, if very violent.

. Occasional change of position favours the action of the lungs, which are apt to become congested. Be careful in turning to first double up the legs, and never turn an animal on its back. I once saw sudden death follow this. A quantity of ingestæ passed up the gullet into the mouth, and then down the windpipe, causing suffocation.

Milk fever, by a novice, may be confounded with paralysis or an ordinary bad cold, if following close on calving. The insensibility or, at first, wild, stupid expression will guide us.

I ought, perhaps, to add that seldom will a case occur, and hardly ever be fatal, if the food is lessened for a week before calving, and an aperient administered twenty-four hours after—steps, of course, only necessary in plethoric animals.

Dentistry.

VULCANITE WORK.

IN the *Dental Cosmos* of Philadelphia, Mr. W. G. DAVENPORT describes in the following words a simple instrument which he has found very efficient in vulcanite work :—

It consists of a *leather wheel*, to be used upon a lathe with moistened pumice-stone, precisely as we are in the habit of using our rubber wheels and cones. The pores of the leather absorb the moisture, retaining enough stone upon the circumference of the wheel to wear away the rubber, almost as fast as it can be cut with a sharp burr. The use of scrapers and sand-paper may be altogether dispensed with, for the plate is left perfectly smooth and ready for the final polish.

Such a wheel may be easily-constructed in the following manner :—Take two pieces of sole-leather, about the size desired, and have them sewed or pegged firmly together, with the polished surface outside; then with a pair of dividers mark the centre and circumference, and with a sharp knife cut the wheel into proper shape, making a hole in the centre for a spindle.

By this means, any dentist who is in the habit of using scrapers and sand-paper may save himself much tedious labour.

EXTRACTUM GALLÆ COMP., FOR TOOTHACHE.

The American *Journal of Pharmacy* gives the following formula :—

℞.—Gallæ pulv., No. 40, four troy ounces.
Pyrethri rad. pulv., No. 40, three troy ounces.
Opii pulveris, half a troy ounce.
Glycerinæ, a troy ounce.
Alchoholis diluti, a sufficient quantity.

Mix the powders, moisten the mixture with three fluid ounces of the diluted alcohol mixed with the glycerin, and pack in a conical percolator. Then pour on diluted alcohol until a pint of tincture has passed. Evaporate on a water-bath to a soft extract and preserve it for use.

This extract has been used for thirty years as an application to painful decaying teeth, where the nerve pulp is sufficiently accessible to bring the extract into contact with it. The glycerin has been added more recently to prevent the extract from becoming friable. A solution in which these quantities are present in a pint, odorised with oil of gaultheria, makes a good liquid preparation applied on cotton. The soft extract is applied by inserting a pellet in the cavity, and then a wad of cotton, advising the patient to reject the saliva which freely flows from the action of the pyrethrum on the salivary glands.

Homœopathy.

IN devoting a portion of our space monthly, as we propose henceforth to do, to the review of such matters connected with homœopathy as shall, from time to time, come before us, we wish it to be distinctly understood that our province is simply that which is connected with the pharmacy. We cannot, nor do we wish, altogether, to avoid the disputes which now and then rage between the orthodox and heterodox members of the profession, as the classes are invariably distinguished by the allopathic school. But, while we have no wish to take either side in this interesting discussion, and while we shall endeavour to exhibit neither special antipathy nor sympathy with the comparatively new system of medicine, we cannot but admit its singular success, and the almost daily advance which it is making, particularly among the educated and upper classes; and we are bound to accept this success as evidence of the importance of homœopathy to chemists and druggists in a commercial sense.

HOMŒOPATHIC DIRECTORY FOR 1870.

Messrs. Turner & Co. have just published the *Homœopathic Directory* for 1870. This book is something far more than its title indicates, and has been produced with a great amount of care—we might almost say of affectionate care. After a comprehensive homœopathic calendar we have a list of the homœopathic practitioners in the United Kingdom, and from this we learn that there are amongst us upwards of 270 duly qualified men, who have openly accepted in part or wholly the truth of Hahnemann's doctrines. Then follows a kind of Gazetteer of the chief towns in the kingdom, compiled expressly from a professional point of view, giving the names of the resident or nearest homœopathic practitioners. There are scores of places where we are informed there is "a good opening" for a gentleman holding these opinions, and it really would seem that the prospects of an embryo-homœopathic physician are as bright as those of any practitioner. It is rather interesting to notice the unequal distribution of homœopathic workers. For example, we find almost close together the towns of Liverpool, with a population of 443,938, and Manchester (including Salford), with a population of 529,245, each in possession of ten homœopathic practitioners: while between them stands Malvern, with the population of only 6,000, with the enormous proportion of seven physicians who practise homœopathy. In addition to the contents referred to, we find in the Directory a list of Societies, Acts of Parliament, and a series of abstracts of the most important papers, contributed to homœopathic literature during the year 1869.

HOMŒOPATHS AND ALLOPATHS IN SOUTHAMPTON.

If the British Homœopathic Society has any decorative honours to dispose of to those who help to advance its cause, we submit to its notice the claims of certain doctors of Southampton. In the apparently utter absence of the logical faculties these gentlemen would be curiosities among the Ultramontanists in the Œcumenical Council at Rome. We are quite sure that their cause is stronger than they know how to make it. This is the story as we have it:—Lately there occurred three vacancies in the medical staff of the dispensary of that town. The chance seems to have been worth but little, as only two candidates offered themselves, one of these being Dr. Cooper of London, a gentleman of considerable reputation, but tainted with the homœopathic creed. Dr. Aldridge, the senior medical officer of the dispensary liberally proposed that gentleman, but the rest of the doctors protested so vehemently against the innovation, many of them threatening to resign altogether if Dr. Cooper should be elected, that the motion was at last withdrawn; not, however, before Dr. Griffin had come down on homœopathy with the crushing weight which only a combination of contempt for, and ignorance of opposing views can give. He informed a sympathetic audience that the principles of homœopathy were "that like things cure like, and the smaller the dose the more potent the effect." Dr. Cooper, observing the mistaken views which the medical men of Southampton appeared to hold on this subject, politely asked for an opportunity to explain homœopathy to them, and was favoured with the following discourteous reply:—

> SIR,—The President and Members of the Southampton Medical Society beg to acknowledge the receipt of your letter, in which, after commenting on the liberal spirit of the age, you ask them to "lend you a hearing."
>
> The President and Members of the Society must decline all communication with anyone who acknowledges that he belongs to a body whom they consider as Quacks.
>
> I have the honour to be, your obedient Servant,
>
> G. A. K. LAKE.

Afterwards the *Lancet* attacked Dr. Aldridge for his share in this burlesque of science, but after receiving from this gentleman a manly and honest letter, our contemporary acquitted him of intentional impropriety of conduct, in the following gracious terms:—

> We are willing to acquit our correspondent of any intentional impropriety of conduct. But he is labouring under the most extraordinary delusion if he thinks that any of the leaders of medical progress are more inclined than formerly to think that the principles of homœopathy are sound. On the contrary, every day is showing more clearly the utter worthlessness of such dogmas as *similia similibus*. If, as is true, there is a greater disposition than formerly among the better class of minds in the regular profession to abstain from vehement abuse of homœopathy, that is because the great advances which our scientific knowledge has made have opened the eyes of the orthodox to the fact that they, too, have been formerly guilty of many absurd therapeutical errors, based on misleading *à priori* notions; and the consciousness of this makes them more charitable to the blunders of individual homœopaths. But the principles of homœopathy are more emphatically condemned than ever; and men of really scientific training, however much they may desire to be personally courteous and fair, find it more impossible than ever to co-operate in practice with men who avowedly base their whole system of therapeutics on principles which are repugnant to common sense, when examined by the light of modern physiology.

Finally, the committee of the Dispensary have settled the matter by resolving "That in their opinion homœopathy, as practised by Hahnemann, is one of the greatest and most singular delusions ever entertained," and more of the same character. These resolutions have been sent to the *Lancet*, and it is to be hoped that the framers of them will receive the appreciative pat on the back, which they seem so much to desire.

Photography.

IMPROVEMENTS AND NOVEL DEVELOPMENTS.

IN the *Year Book of Photography** for 1870, edited by Mr. G. WHARTON SIMPSON, the fruits of a year's labours are aggregated, selected, arranged, and condensed. Whatever of discovery or important novelty belongs to the past year is definitely stated in this admirable little manual. Moreover, as the editor truly observes, the less tangible changes, which consist in minute *nuances* of improvement and modification, are embodied in re-statements of the processes to which they belong, so that the whole work constitutes an epitome of the most improved practice of the art. When we add that the annual contains many original articles written by eminent photographers, we have said enough to indicate its scope and character. The following extract from an article on the progress of the art during the past year, forms the best introduction to the notes on photography which will regularly appear in the pages of this journal:—

In printing processes the most marked improvements and the most novel developments have been made, especially in the direction of permanent and rapid printing. The carbon process, which had, during the few previous years, attained a high state of perfection and practicability in the hands of Mr. Swan, has during the year been still further simplified by Mr. J. R. Johnson, and in simplicity, rapidity, and excellence it now far surpasses silver printing. Mr. Blair has, during the year, contributed many useful and ingenious suggestions, extending the range of printing facilities with carbon and pigments. Mr. Window has patented a new method of producing carbon pictures in pigment without any transfer, but the details have not yet transpired.

In photo-mechanical printing, the introduction of Herr Albert's process has been the event of the year. Photocollography, or the method of using a film of bichromated gelatine hardened by the action of light passing through a negative, so as to acquire properties resembling those of a lithograph, has been carried by Herr Albert to a degree of perfection never before obtained. The image, although in some slight degree resembling those obtained by lithography, surpasses in perfect delicacy and true half-tone anything hitherto obtained in photo-lithography; and as the prints can be produced with margin, with moderate rapidity and reasonable cost, the process promises a revolution in the application of photography to book-illustration. Other processes, based on similar principles, have been introduced during the year, but none equal in practical excellence to that of Herr Albert. The account of it first appeared in the *Photographic News*, where an example was subsequently given. The photo-relief process of Mr. Woodbury has progressed during the year in technical excellence. Whilst the process to which we have referred most resembles fine lithography or photography on plain paper, the latter competes directly with photography on albumenized paper, from which it is not easily distinguishable. It also competes with every method of producing transparent photographs on glass, producing more perfect results than the best, at a greatly reduced cost.

---

* Published by Piper and Carter, 15, Gough Square, E.C. Pp. 120. Price 1s.

Ceramic photography has attracted some attention and made some progress during the year. The most perfect results, however, produced in this country—those of Mr. Henderson—are, we regret, by a secret process.

Modes of enlarging have not varied much during the year. Enlarging in the camera on wet collodion, and transferring, have become more general. Solomon's magnesium lamp has come into more frequent use; and Dr. Van Monckhoven's new apparatus with the oxyhydrogen light and carbonate of magnesia pillars promises to effect a revolution in modes of enlargement.

In silver printing processes some interesting novelties have appeared during the year. The elegant method of Mr. Sarony of producing what are termed photo-crayons have attracted considerable attention. An enlarged transparent positive on glass, backed by a piece of tinted crayon paper with a hatched vignette design, is found to give a portrait of great softness, and having much of the effect and finish of a well-executed crayon drawing. The method of camera printing on collodion, and then transferring to paper, especially for enlargements, has received more attention, and excellent results are so produced. Printing on tinted papers, or tinting the prints after they are fixed, has been revived to some slight extent during the year. The high lights are either put in with body colour, or stopped out by some resist, whilst the print undergoes its tinting or dyeing process. The effect resembles that of a drawing in black-and-white crayons on a tinted board.

The system of printing through a medium, so as to reduce sharpness, and soften harsh lines and crude gradations, has received some attention during the year, but it has not been generally adopted. The system of modifying defects and softening gradations by retouching the negative has, however, come largely into practice.

Facilities for silver printing, in the shape of permanent sensitive papers, have come considerably into use during the year. Besides the permanent collodio-chloride paper of Obernetta, an excellent example of a similar paper has been introduced by MM. Sanders and Risse, who have also introduced a permanent or keeping sensitive albumenized paper. Mr. Charles Durand and Mr. Henderson have introduced sensitive albumenised papers with long-keeping properties, giving excellent results. MM. Schaeffner and Mahr's carbonate of silver paper possesses somewhat similar qualities, but it requires fuming with ammonia to render it sensitive.

In the production of negatives, no especial modifications have been made. The question as to the possibility of working with alkaline or neutral instead of acid conditions, in the wet collodion process, has received renewed attention, and some suggestions for rendering work with alkaline conditions possible have been made by Mr. Blanchard and others; but in practice the wet process remains unchanged.

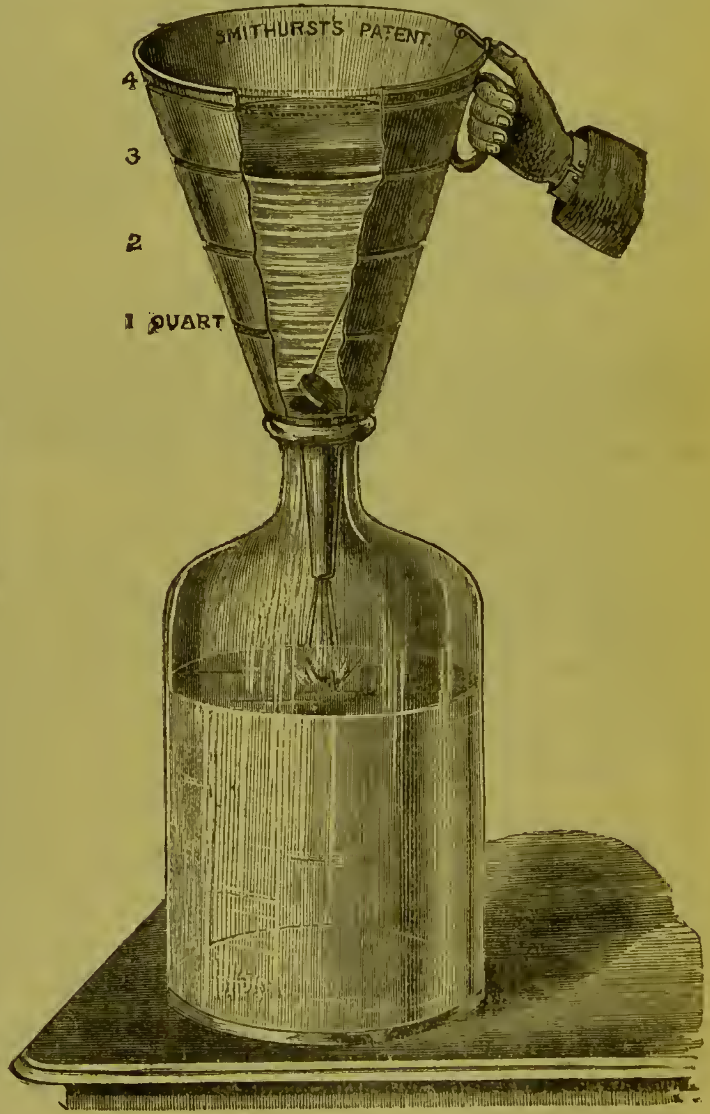
But little has been done in dry processes during the year. The gumgallic process of Mr. Gordon has been more generally practised, and appears to be a general favourite. The coffee process has also been adopted by many with success. No novelty of importance has come into practice.

Developing processes remain unchanged in practice. Alkaline development has become more common in dry processes, and the use of iron solutions in developing dry plates has been extended. A method of dispensing with acid restrainers has been proposed by Mr. Wharton Simpson, who suggests the use of neutral viscous substances to retard reduction, by mechanically impeding the operation of the reducing agent, and delaying precipitation. The method promises some degree of success.

NOTES OF NOVELTIES

SMETHURST'S PATENT FUNNEL.

THE accompanying engraving is a representation of this new funnel, which will be found of service for more purposes than we can spare space to indicate. If the reader will examine the illustration he will at once see the principle on which the funnel is constructed. But we may explain, that besides its peculiar advantage of saving loss or waste, it is also an accurate measure, so that for oils, wines, vinegar, and many other liquids, it will be found also an economizer of time. If made with very narrow apices, as we presume might be done—probably it is—these funnels would be of immense value for druggists in filling a lot of castor-oil or cod-liver bottles, and for other purposes, such as the separation of liquids of different specific gravities. Messrs. John Bailey and Co., of Salford, are the makers; but we believe all the druggists' sundry houses are supplying these.

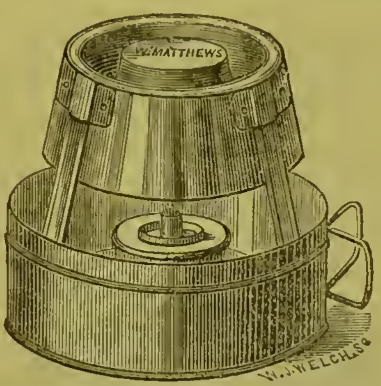


CANTOR'S DETERGENT POWDER.

THE above is for cleansing sponge, and answers its purpose exceedingly. It is neatly wrapped, and is a saleable article.

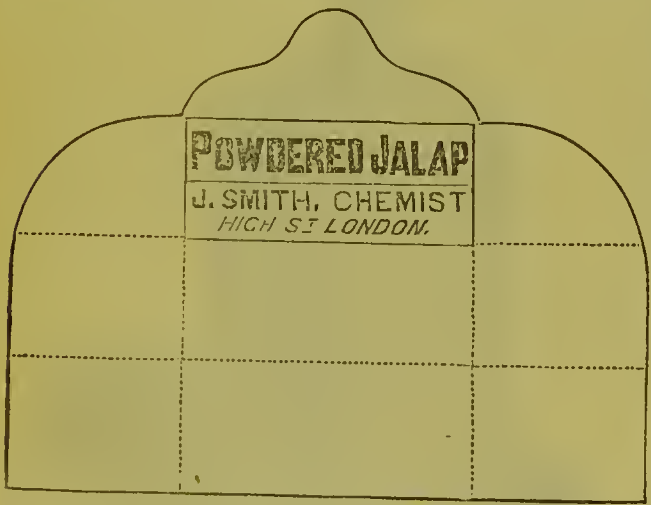
NEW LAMP BATH.

The lamp represented in the following engraving is a very simple and convenient contrivance, especially intended for those patients to whom fumigation is applied by means of a Lamp Bath. The application of steam or mercurial vapour is very easily effected by adopting this bath. When not in use the bath is closed down, and fits in a tin box three inches deep and six inches in diameter. Messrs. Matthews Brothers, of Portugal-street, are the makers.



NEW POWDER WRAPPERS.

Mr. Vint, of Sunderland, has designed and registered a form of paper for wrapping up powders, which, though at first sight a small matter, will be found a very useful aid to the chemist in putting up large quantities of little powders neatly and quickly. By using these, as will be seen from the sketch, the processes of folding, labelling, and sealing are all accomplished at once, and a more convenient little package is the result.



BAYLEY'S ANTISEPTIC SALT.

The article sold under the above name is recommended for the preservation of meat in warm weather or in warm climates. Our experiment was performed on a kidney, half of which was sprinkled with this article, the remaining half being hung up under precisely similar conditions for three weeks. The usefulness of the salt was very apparent at the end of that time, as the preserved half was quite sweet, while the other was most decidedly "unfit for human food." The salt is sold in bottles provided with a perforated top for convenience of application.

COLLINGE'S SPONGE CLOTH.

We have received a sample of a new material, made by a Manchester house under the above name. It is made of various qualities. The coarsest makes admirable dusters, especially if grease is to be wiped by them at all. The finer sorts are made into gloves for toilet purposes, and we believe are cheaper than those now in use.

RIMMEL'S VALENTINES.

Before our next appearance, the annual festival of Venus and Saint Valentine, with its army of postmen, will have taken place. It promises to be a more brilliant demonstration than ever, if Mr. Rimmel's fragrant and beautiful stock may be taken as a guide. Valentines varying from sixpence to ten guineas offer a sufficiently wide choice for all classes. The Mediæval are an artistic specimen of illumination. Cupid's Magnet gives us as exact an idea of the relative position of the emotional bumps in the heart as does a phrenological chart of the faculties of the brain. We cannot notice all Mr. Rimmel's novelties; but chemists who sell perfumery might very appropriately introduce some of these, and would do a good trade in them between now and the 14th of February.

REVIEWS

LETTS'S DIARIES, 1870.

The diaries by Messrs. Letts, Son, and Co. represent between sixty and seventy varieties, and these again are capable of further subdivision according to their different styles of binding. They have evidently been compiled with much care, as the choice and arrangement of matter show a nice appreciation of the wants of the different classes for whose use they have been respectively designed. Their *Appointment Diary*, with separate spaces for each hour in the day, is an invaluable pocket companion for many men of business. The *Medical Diary*, which we believe is issued this year for the first time, is extraordinarily compact and complete. The literary portion consists of such matter as "Poisons and their Antidotes," "Therapeutical Equivalents," and much more which no human doctor can carry in his head, but which he certainly ought to have somewhere about him. The blank pages are so ruled as to afford at the same time exact memoranda of visits to be paid, and records of visits which have been paid. Thus the physician has here a day-book as well as a diary. Other pages are devoted to "Midwifery Engagements," and others to "Vaccination Memoranda." All connected with the medical profession will appreciate the usefulness of this publication.

OWEN'S MANUAL OF PHARMACY.

The Shilling Magazine of Pharmacy. Designed as a Class Book for Students, and a Counter Book for Dispensers. By O. Davies Owen. Simpkin, Marshall, and Co.

This is virtually a cheap edition of Mr. Owen's handy "Conspectus of the British Pharmacopœia," which has been favourably noticed in this journal. It simply lacks the ruled memoranda pages and the substantial cover of the larger work. The list of eclectic remedies has been considerably augmented.

We are compelled to omit lengthy reviews of Dr. Bence Jones's *Life and Letters of Faraday* (Longmans), Mr. Haughton Gill's *Chemistry for Schools* (Walton), and the second edition of *Cups and their Customs* (Van Voorst).

Corner for Students.

CONDUCTED BY RICHARD J. MOSS.

The chemical formulæ employed in this section are based upon the new system of atomic weights, unless the use of the older system is specially indicated. In the *British Pharmacopœia* the symbols corresponding to those adopted here are printed in heavy Clarendon type. The chemical nomenclature generally used in this Corner for Students agrees with that adopted in the new edition of *Fownes's Manual of Chemistry*, which is recommended as a text-book.

QUESTIONS.

I. QUINIAL SULPHAS, *B.P.*—Describe a process by which quinidia, or cinchonia, may be detected if present in a sample of this salt.

II. VOLUMETRIC SOLUTION OF BICHROMATE OF POTASH, *B.P.*—If 121 c.c. of this solution are required for the complete oxidation of 10·84 grammes of a sample of crystallised ferrous sulphate; what percentage of real salt is present?

III. CHLOROFORMUM, *B.P.*—Explain, with the aid of symbolic equations, the production of this substance by the officinal process.

IV. FERRI OXIDUM MAGNETICUM, *B.P.*—Why is it directed that this oxide should be dried at a temperature not exceeding 120° F? What is indicated by the fact that it does not effervesce with acids?

V. ANTIDOTE FOR ARSENIC.—Moist ferric hydrate, especially when administered in the form of a mixture of solution of ferric chloride and sodium carbonate, is considered an effectual antidote in cases of poisoning by arsenic. Explain the action of this antidote with the aid of symbolic equations. Might not dried ferric hydrate be employed with equal advantage?

VI. ALKALOIDS.—Classify the following alkaloids according to their volatility, their behaviour with potassium hydrate, and with acid sodium carbonate: brucine, cinchonine, conine, morphine, narcotine, nicotine, quinine, strychnine, veratrine.

VII. MANGANESE ORE.—From the following results obtained in the analysis of a sample of manganese ore, calculate the percentage of manganese dioxide present.

A portion of the sample weighing ·452 of a gramme is dissolved in hydrochloric acid, and the chlorine evolved received in a solution of potassium iodide; the iodine thus liberated requires for its removal 82 c.c. of a solution of sodium hyposulphite, which contains 20 grammes of the crystallised salt in every 1000 c.c.

VIII. CHEMICAL TERMS.—Give a short definition of each of the following terms: Isomeric, Polymeric, Metameric.

IX. ACTION OF ACIDS UPON SALTS.—What are the principal circumstances under which decomposition ensues, when a salt is treated with an acid different from that existing in the salt?

X. SPECIFIC GRAVITY.—A specific gravity bottle which holds 1000 grains of water is filled with benzol having a sp. gr. of ·85; after the introduction of 100 grains of a solid, it is found that the contents of the bottle weighs 905·04 grains. What is the specific gravity of the solid?

ANSWERS.

I. LIQUOR SODÆ ARSENIATIS, *B.P.*—The objection to the use of crystallised sodium arsenate in this powerful preparation is, that the quantity of water contained in the crystals is liable to variation. The formula $Na_2HAsO_4, 12H_2O$ represents the fresh crystals containing 53·7 per cent. of water; these soon effloresce, and yield a salt having the formula $Na_2HAsO_4, 7H_2O$, corresponding to 40·4 per cent. of water; the crystals heated to 300° F. lose all water, and yield the anhydrous salt of invariable composition, which is consequently employed in the preparation of the officinal solution.

II. ACIDUM PHOSPHORICUM DILUTUM, *B.P.*—The officinal test for the strength of this solution consists in the addition of a given weight of the solution to a quantity of lead oxide sufficient to cause all the phosphoric acid present to yield lead phosphate; therefore, if by employing 355 grains of dilute phosphoric acid and 180 grains of lead oxide a residue weighing 215·5 grains (after ignition) is produced, it follows that the quantity of phosphoric anhydride present is 35·5 grains (215·5—180), or 10 per cent.

The hydrogen monosulphide test is intended to detect metallic impurities, especially lead or platinum. The barium chloride test is for sulphuric acid; the silver nitrate and nitric acid test for hydrochloric acid. The solution of albumen is added to ensure the absence of metaphosphoric acid; if this acid is present coagulation of the albumen ensues. Nitric acid, if present, is detected by mixing equal volumes of the dilute acid and pure sulphuric acid, and adding this mixture to a solution of ferrous sulphate, when a dark colouration is imparted to the latter if nitric acid is present. The absence of phosphorous acid is indicated, when no precipitate is formed, on the addition of a solution of mercuric chloride to an equal volume of the dilute acid, and the mixture heated.

III. ÆTHER, *B.P.*—The first step in the preparation of this substance according to the officinal process is the addition of sulphuric acid to rectified spirit; the products of this operation are, water and ethylsulphuric acid, a compound having the composition of sulphuric acid with half its hydrogen replaced by the compound radical ethyl. This reaction is represented thus:—

$$C_2H_5HO + H_2SO_4 = H_2O + C_2H_5HSO_4.$$

When the ethylsulphuric acid is brought into contact with a fresh supply of alcohol at a proper temperature, a substitution the reverse of the above takes place, resulting in the production of sulphuric acid, and ethyl oxide or ether; thus:—

$$C_2H_5HSO_4 + C_2H_5HO = H_2SO_4 + (C_2H_5)_2O.$$

By keeping up the supply of alcohol, and maintaining the requisite temperature (between 260° and 310° F.), the same series of reactions is repeated. The ether which distils over with water is subsequently purified by redistillation, after having been agitated with a strong solution of calcium chloride, and a little calcium hydrate; the former absorbs water, and the latter takes up any sulphurous acid that may have been produced.

IV. VOLUMETRIC SOLUTION OF IODINE, *B.P.*—The reaction which takes place between iodine and arsenious acid in solution is thus represented:—

$$2I_2 + 5H_2O + As_2O_3 = 4HI + 2H_3AsO_4.$$

From this equation it is evident that four equivalents of iodine (= 508) are required for the oxidation of one molecule of arsenious acid (= 198); and as 100 c.c. of the volumetric solution contain 1·27 grammes ($\frac{508}{400}$ = 1·27) of iodine, it follows that they should oxidise ·495 of a gramme of arsenious acid ($\frac{198}{400}$ = ·495), therefore the quantity of the solution required for ·4 of a gramme of arsenious acid is formed by the following proportion—

$$\cdot495 : \cdot4 = 100 : x \therefore x = 80\cdot808.$$

When the solution is used for testing sulphurous acid, the reaction which takes place is as follows:—

$$I_2 + 2H_2O + SO_2 = 2HI + H_2SO_4,$$

two equivalents of iodine (254) being required for one of sulphurous acid (64); therefore the weight of the latter which 1·27 grammes of iodine ($\frac{254}{200}$ = 1·27) will oxidise is ·32 of a gramme ($\frac{64}{200}$ = ·32), a quantity which is contained in 3·478 grammes of the solution of which it constitutes 9·2 per cent., as ascertained by the following proportion:—

$$9\cdot2 : \cdot32 = 100 : x \therefore x = 3\cdot478.$$

The action of iodine on the arsenious acid in the solutions, Liquor Arsenicalis, B.P., and Liquor Arsenici Hydrochloricus, B.P., is represented by the first equation given above, and as 44·15 grammes of either of these solutions contain ·4 of a gramme of arsenious acid, the quantity of the volumetric solution to which this weight is equivalent is 80 808 c.c., as previously ascertained.

V. SODÆ VALERIANAS, *B.P.*—The first product of the officinal process is valerianic acid, which is produced by bringing amylic alcohol in contact with the oxygen evolved by the action of sulphuric acid on potassium, bichromate thus:—

$$2(K_2Cr_2O_7) + 8H_2SO_4 = 2\,(Cr_2,3SO_4) + 2K_2SO_4 + 8H_2O + 3O_2$$

$$C_5H_{11}HO + O_2 = HC_5H_9O_2 + H_2O.$$

Amyl valerianate is also produced in this operation, thus—

$$2C_5H_{11}HO + O_2 = C_9H_{11}C_5H_9O_2 + 2H_2O.$$

The distillate, which consists of these two substances, is then saturated with sodium hydrate, which not only combines with the free valerianic acid, but also decomposes the amyl valerianate, liberating amylic alcohol, thus:—

$$HC_5H_9O_2 + C_5H_{11}C_5H_9O_2 + 2NaHO = 2NaC_5H_9O_2 + C_5H_{11}HO + H_2O.$$

VI. Calcis Phosphas, *B.P.*—When the impure calcium phosphate contained in bone-ash is digested with dilute hydrochloric acid, calcium chloride and acid calcium phosphate are produced, thus:—

$$Ca_32PO_4 + 4HCl = 2CaCl_2 + CaH_42PO_4.$$

On adding an excess of ammonia to the solution containing these substances, calcium phosphate is precipitated, whilst ammonium chloride remains in solution, thus:—

$$CaH_42PO_4 + 2CaCl_2 + 4NH_4HO = Ca_32PO_4 + 4NH_4Cl + 4H_2O.$$

VII. Methylated Spirit.—This substance consists of spirit of wine containing ten per cent. of methylic alcohol (CH_3HO). It may be detected in tinctures by the following method. Into a small flask, having a long bent tube attached, put 30 grains of powdered potassium bichromate, half an ounce of water, 25 minims of strong sulphuric acid, and to this mixture add about 30 minims of the spirit to be tested (distilled off from a portion of the liquid under examination). Having allowed this mixture to stand for about fifteen minutes, distil half a fluid ounce; to this distillate placed in a small dish, add a slight excess of sodium carbonate, boil down to about a quarter of an ounce, add acetic acid sufficient to impart a distinct but feeble acid reaction, pour the liquid into a test tube, and add a solution of silver nitrate (one grain in about 30 drops of water). If methylated spirit is present, a dark brown or black precipitate of metallic silver will separate, and a distinct film of silver should remain on the tube after being rinsed out and filled with clean water. But if after the addition of the silver nitrate the fluid merely darkens a little and continues quite translucent, the spirit is free from methylic alcohol.

VIII. Sulphuric Acid.—In the commercial process for the manufacture of this acid from sulphur, the latter substance is first converted into sulphurous oxide by burning in air, $S_2 + 2O_2 = 2SO_2$; this gas, together with the vapour of nitric acid (produced by the action of sulphuric acid on sodium nitrate, $2NaNO_3 + H_2SO_4 = Na_2SO_4 + 2HNO_3$) is conveyed into leaden chambers, where it is brought into contact with aqueous vapour, the effect of which upon the sulphurous oxide is to produce sulphurous acid, thus: $SO_2 + H_2O = H_2SO_3$. The latter substance becomes oxidised at the expense of nitric acid, sulphuric acid, water and nitric oxide being produced, thus: $3H_2SO_3 + 2HNO_3 = 3H_2SO_4 + H_2O + 2NO$. The nitric oxide thus produced acts as a carrier of oxygen from the air to large quantities of sulphurous acid, for by combining with oxygen it is converted into nitric peroxide, $2NO + O_2 = 2NO_2$, which, by giving up half of its oxygen to the sulphurous acid, is reconverted into nitric oxide, thus: $NO_2 + H_2SO_3 = H_2SO_4 + NO$.

When the water at the bottom of the chamber has become loaded to a sufficient extent with acid it is drawn off, and the acid concentrated by evaporation. 100 pounds of powder should produce 17·166 gallons of oil of vitriol, having a sp. gr. of 1·843, and containing 96·8 per cent. of sulphuric acid (H_2SO_4).

As one equivalent of sulphur (32) produces one equivalent of sulphuric acid (98), the weight of sulphuric acid produced by 100 pound of sulphur is found by the proportion—

$$32 : 100 = 98 : x \therefore x = 306·25.$$

The specific gravity of the oil of vitriol being 1·843, one gallon should weigh (1·843 × 10) 18·43 pounds, by the following proportion we find the number of gallons which should weigh 306·25 pounds:—

$$18·43 : 306·25 = 1 : x \therefore x = 16·6169.$$

As the sulphuric acid constitutes 96·8 per cent. of the oil of vitriol, the quantity of the latter, equivalent to 16·6169 gallons of she former, is found by the proportion—

$$96·8 : 16·6169 = 100 : x \therefore x = 17·166.$$

IX. Organic Acid.—The composition of the acid is represented by the formula $H_2C_4H_4O_6$ (tartaric acid).

As 50 grains of the silver salt yield 26·67 grains of metallic silver, the quantity of silver contained in 36·4 grains of the salt is found by the proportion—

$$50 : 36·4 = 29·67 : x \therefore x = 21·599;$$

and as 36·4 grains of the salt gave 3·6 grains of water, or ($\frac{3·6\times2}{18}$ =) ·4 of a grain of hydrogen; and the same quantity of the salt gave 17·6 grains of carbon dioxide equal to ($\frac{17·6\times12}{44}$ =) 4·8 grains of carbon, the remaining constituent being oxygen, it follows that the weight of this substance in 36·4 grains of the salt is 9·601 grains (36·4 — 21·599 + ·4 + 4·8 = 9·601).

By dividing the weight of each constituent by its atomic weight, the following relative numbers are obtained:—

Silver	$\frac{21·599}{108}$	= ·199
Hydrogen	$\frac{·4}{1}$	= ·400
Carbon	$\frac{4·8}{12}$	= ·400
Oxygen	$\frac{9·601}{16}$	= ·600

according to which, taking the silver as unity, we have the formula $AgC_2H_2O_3$; therefore, on the hypothesis that the acid (from which this salt is formed) is dibasic, its constitution is represented by the formula, $H_2C_4H_4O_3$.

X. Gas Analysis.—The composition of the mixture is as follows:—

Hydrogen	25 volumes.
Marsh Gas	25 ,,
Nitrogen	30 ,,
Carbon Monoxide ...	20 ,,

The volume of the gases after the first explosion is 102·5 (100 + 100 — 97·5), by the action of potassium hydrate, 45 volumes of carbon dioxide are removed, leaving 57·5 (102·5 — 45 = 57·5); this must consist of the nitrogen in the mixture, together with the excess of oxygen originally added; which excess must be 27·5 volumes, because the reduction of 82·5 volumes, which takes place in the final explosion after admixture with hydrogen, is due to the production of water, the quantity of oxygen required to produce which is ($\frac{82·5}{3}$ =) 27·5 volumes, therefore the amount of nitrogen present is 30 volumes (57·5 — 27·5 = 30), and the remainder of the mixture, viz., 70 volumes, consists of the combustible gases. Accordingly, if we represent the volume of hydrogen present by x, that of marsh gas by y, and that of carbon monoxide by z, we have the equation:

$$x + y + z = 70.$$

Now, hydrogen combines with half its volume of oxygen to produce water; marsh gas combines with twice its volume of oxygen, to produce its volume of carbon dioxide; and carbon monoxide combines with half its volume of oxygen, to produce its volume of carbon dioxide; and as the quantity of oxygen which entered into combination in the first explosion was (100 — 27·5 =) 72·5 volumes, we have the equation:

$$\frac{x}{2}\,2\,y + \frac{z}{2} = 72·5, \text{ or } x + 4\,y + z = 145.$$

and subtracting the equation $x + y + z = 70$, we have $3\,y = 75 \therefore y = 25$; then as the quantity of carbon dioxide produced is 45 volumes, we have the equation, $y + z = 45$, but $y = 25 \therefore z = 20$, and $x = 25$.

PRIZES.

The First Prize for solutions printed in our December number was awarded to

Albert H. Samuel (A. H. S.) 56, Hanover-street,
Liverpool.

The Second Prize has been awarded to
J. Watts, Jun. (J. W.), Attercliffe, Sheffield.

Marks awarded for Answers.

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	E.	Total.
A. H. S. (*1st prize*) ..	4	6	6	6	5	4	10	5	6	4	8	64
J. W. (*2nd prize*) ..	5	7	5	6	5	5	9	7	6	—	6	61
T. T.	4	3	6	6	5	5	9	4	6	5	5	58
A. Frasor	5	4	6	3	5	9	8	7	0	5	6	54
W. Maddocks	5	5	6	3	5	5	9	5	0	0	5	48
J. K.	2	3	6	2	5	5	9	3	—	—	3	38
J. H. Watson	0	—	5	0	2	0	6	3	1	0	4	21

TO CORRESPONDENTS.

⁂ All questions forwarded to us for publication in this "Corner for Students" should be accompanied by the answers which the propounders believe to be correct. Communications should include the names and addresses of the writers; those which reach us after the first day of the month will be disregarded.

Prizes.—The students to whom prizes are awarded, are requested to write at once to the publisher, naming the book they select, and stating how they wish it forwarded.

A. H. S.—VI. Your answer to this question was correct, with the exception of the formula for ammonia. VIII. You calculated the quantity of oil of vitriol equal to 326·25 pounds sulphuric acid, instead of 306·25. X. The amount of gas after the addition of hydrogen could not be 115 volumes, because after the absorption of the carbon dioxide the gas measures 57·5 volumes, and this is mixed with *at least* twice its volume of hydrogen, consequently the mixture measures at least 172·5 volumes.

T. T.—X. The volume of the gases after the addition of hydrogen is not given in the problem; the result obtained would be the same no matter what volume was assumed.

A. Fraser.—II. The mercuric chloride is added to ensure the absence of phosphorous acid; in the presence of the latter a precipitate of mercurous chloride takes place, thus:

$$4HgCl_2 + 2H_2O + P_2O_3 = 4HgCl + 4HCl + P_2O_5.$$

IX. You overlooked the silver altogether, without taking it into account the proportion of oxygen could not be ascertained. IV. You refer to the British weights and measures, not the metrical

W. Maddocks.—Your result is correct supposing the oil of vitriol to be pure sulphuric acid. The question states that it contains 96·8 per cent. of acid (H_2SO_4). IX. See remarks to A. Fraser under this head.

J. H. Watson.—VIII. The nitrogen of the atmosphere takes no part in combustion except to moderate the action of the oxygen.

Books offered as First Prizes.

Attfield's *Introduction to Pharmaceutical Chemistry.* (Van Voorst.)
Brooke's *Elements of Natural Philosophy.* (Churchill.)
Conington's *Handbook of Chemical Analysis;* with Tables of Qualitative Analysis adapted to the same. (Longmans.)
Eliot and Storer's *Manual of Inorganic Chemistry.* (Van Voorst.)
Fownes's *Manual of Elementary Chemistry, Theoretical and Practical* (Churchill.)
Fresenius's *Qualitative Analysis.* (Churchill.)
Ganot and Atkinson's *Elementary Treatise on Physics.* (Longmans.)
Garrod's *Materia Medica;* with Modern Chemical Notation. (Walton.)
Noad's *Chemical Analysis, Qualitative* and *Quantitative.* (Reeve.)
Northcote and Church's *Qualitative Analysis.* (Van Voorst.)
Odling's *Outlines of Chemistry.* (Longmans.)
Royle and Headland's *Materia Medica.* (Churchill.)
Williamson's *Chemistry for Students.* (Clarendon Press.)

[Any other scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.]

Books offered as Second Prizes.

Barff's *Introduction to Scientific Chemistry.* (Groombridge).
Bloxam's *Laboratory Teaching.* (Churchill.)
Church's *Guide for Students in Agricultural Chemistry.* (Van Voorst.)
Galloway's *First Step in Chemistry.* (Churchill.)
Gill's *Chemistry for Schools.* (Walton.)
Hofmann's *Introduction to Modern Chemistry.* (Walton.)
Huxley's *Lessons in Elementary Physiology.* (Macmillan.)
Oliver's *Lessons in Elementary Botany.* (Macmillan.)
Orme's *Introduction to the Science of Heat.* (Groombridge.)
Potts's *Elements of Euclid.* School Edition. (Longmans.)
Roscoe's *Lessons in Elementary Chemistry.* (Macmillan.)
Wormell's *Elementary Course of Mechanics.* (Groombridge.)
Wurtz's *History of Chemical Theory.* Translated by Watts. (Macmillan.)

[Any other scientific book which is sold for about five shillings may be taken as a second prize.]

PRIZES FOR TRANSLATION.

GABRIEL FAERNE—1743.

Mr. Joseph Ince offers a first prize, consisting of a Latin or French work of the usual value, for the best English translation of either version of the fable printed below. The competitors must be young men in the employ of pharmaceutical chemists or chemists and druggists. They may refer to books, but must not be aided by advice from others. Should both versions of the fable be correctly translated two prizes will be given.

Bubulcus & Hercules.

VIA in lutoſa praegrave haeſerat plauſtrum,
Merſis ad uſque axem rotis.
Nihil hic bubulcus providere, nec ſeſe
Opi ferendae accingere:
Tantum ſedens, ſuamque conquerens ſortem,
Magnum invocabat Herculem.
Cui nube fultus candida Deus, praeſto
Fuit, & monere haec inſtitit:
Age, inquit, & tu enitere ipſe per tete,
Atque id, quod in te eſt, expedi:
Stimulo boves, humeriſque promove plauſtrum.
Tum demum agentem gnaviter
Vocatus adjuvabo, vique caeleſti
Humana vota proſequar.

Vigilando, agendo, providendo quod poſſis,
Paratur e caelo favor.

Le Bouvier & Hercule.

UN Chariot dans une graſſe argile ;
Malgré ſix bœufs demeuroit immobile,
Et de ce Chariot un Bouvier conducteur
Avec de longs ſoûpirs lamentoit ſa miſère ;
Et ſe tenant là ſans rien faire,
D'Hercule imploroit la faveur.
Alors ſur une claire nuë
Hercule s'offrit à ſa veuë,
Et lui tint ce ſage diſcours :
Courage enfant, que ton cœur s'évertuë,
Toy-même icy prête-toy du ſecours,
Pique tes bœufs, pouſſe à la rouë
Mets-toy, s'il le faut, dans la bouë,
Agis & ne ceſſe un moment
De te donner du mouvement ;
Fais pour domter tout obſtacle contraire,
Sans jamais dire c'eſt aſſez,
Ce qu'humainement on peut faire ;
Et tes vœux ſeront exaucez.

" Veiller, prévoir, agir avec conſtance,
" Sur nous du Ciel attire l'aſſiſtance.

THE MONTH

LONDON CHEMISTS' ASSOCIATION.

ADDRESS DELIVERED BY MR. FOSTER D. DOWNES AT THE OPENING MEETING OF THE SESSION, JANUARY 6.

MR. PRESIDENT,—Allow me, in the first instance, to thank you for the kind manner in which you have introduced me to the meeting; and in the second to thank you, gentlemen, for your attendance to listen to my address, it being, as you are aware, the inaugural one of the session, and the first I have had the honour of delivering before you for fully five years. My connection with this Society, as the greater portion of you have probably been made acquainted, dates from the period when the *idea* of the desirability of forming such an association was first conceived. I have, therefore, had opportunities of witnessing this Society, both in its embryo condition as well as in its maturer state, and I think that very few—in fact, I may say that *no* member has had greater facilities for observing the progress of our Association, or for watching how gradually, yet surely, its sphere has been extended, and how fully borne out have been the hopes and aspirations of those who may be considered its originators. When this Association was first established the main object desired to be obtained was to make it a kind of mutual improvement society. How successfully this object has been carried out I think one needs only to look back upon the many pleasant and instructive evenings we have passed together to find a satisfactory and conclusive response.

I have no desire to arrogate to myself the designation of a prophet, but I cannot resist repeating to you a few words uttered by me upon the occasion of my reading my first paper (now very nearly six years ago) before this Society. The words were as follow:—" We have no reason to believe, gentlemen, but that our Society may last for many years—in fact, for all we know, it may never die; for here we are in the greatest city in the world, a place which all young men are anxious to live in, and which, when once they do get a situation in, they hardly like to leave. Therefore, why is it not likely that our Society should last for many years? And if it should stand for any lengthened period, will it not be a satisfaction for us to look back and reflect that we were among the first members of our Society, which perhaps at some future time may become one of importance?" What expressions, to a certain extent, could possibly have been more true? What anticipation could possibly have been more satisfactory? This Association—as far, indeed, as the wishes and desires of its originators could make it—has fulfilled its mission. It *has* proved a mutual improvement society, inasmuch as the papers read weekly before you have shown a steady improvement, not only in the chemical knowledge of their various authors, but also in the deep researches of their several compilers. Since the time when I last had the pleasure of addressing you two most important events have occurred in connection with our profession. (I take it, by the way, that I shall not be called to account for designating our vocation a "profession," for when a man is not allowed to commence a business until he has passed a certain examination I certainly think that the man's calling is entitled to be looked upon as a profession.) The two events to which I refer are the second edition of the "British Pharmacopœia" and the passing by Parliament of the Pharmacy Act Amendment Bill. By the former we are placed in possession of a really useful book, and one which reflects as much honour upon its various compilers as it gives satisfaction to those who have to use it. The want of a national "Pharmacopœia" has undoubtedly long been felt, and our best thanks are due to those gentlemen who, by their careful computation and successful endeavours, have compiled the book, to which at all times it is a perfect pleasure to refer. The Pharmacy Act Amendment Bill has possibly given dissatisfaction to some, but where is the man who can with justice say but what he thinks it will ultimately be for our benefit? The various restrictions affecting the sale of poisons, and the regulations concerning gentlemen being compelled to have been assistants for three years prior to their being admitted to the modified examination, are, in the estimation of some, great drawbacks; but can any one of us say that it is not what ought to be? The sale of poisons *should* and *must* be restricted, and the power of dealing out life or death must also be constrained to those who are fully competent to acquit themselves properly. The ultimate effect of the Act will be to throw us entirely under the espionage of the Pharmaceutical Society, but should we be inclined to resist this? I say certainly—No. The Pharmaceutical Society stands to us in the position of a schoolmaster. Did any of us ever like our schoolmaster? For myself I unhesitatingly reply, No. I had the greatest horror of him; and yet, had it not been for my schoolmaster, I possibly should not have been able deliver this address to you this evening. So it is with our Pharmaceutical Society. Some of us dislike it because we are not accustomed to have its mandates and decrees issued to us in such an official manner; and yet I fancy, if we could but see into futurity, we should observe that the Pharmaceutical Society would do as much for chemists as the Royal College of Physicians or the Royal College of Surgeons has done for physicians and surgeons. It will be to us as their colleges have been to them—a stepping-stone to greatness, and a sure method of our being raised to a higher grade in the social scale than we at present enjoy. It may not be in our generation, or the generation which has to succeed us; but, as sure as the sun will rise to-morrow, or that dawn will succeed the night's darkness, so sure will our calling be looked upon in a more responsible light than it at present is, and the members of our vocation be treated in a style which their education and their position will fully entitle them to receive. And our Association, gentlemen, what has it not done to establish that good feeling and understanding which it must be the earnest desire of every well-wisher of our profession to see disseminated among us? We meet here once a week, we enjoy the benefits of each other's society, we profit by the recapitulation of each member's experience,—here the germs are sown of that mutual good-will and sincere regard which in maturer life will not be regretted, and in after years will be looked back upon with pleasure. Which one amongst us or around the table now, but who at any future time, when possibly in business on his own account, will only be too glad to extend his hand in friendship to his fellow-chemist (if indeed in opposition to himself) whom he has once met at this festive board? And ought we not to be proud of belonging to this Association—the first one originated in the United Kingdom; ought we not to feel proud that the position into which we have placed ourselves has been an incentive to many and many a provincial town to follow our brave example? How many provincial towns have started their Assistants' Association after the pattern and model of our own? how many have deemed it prudent to follow the precepts of this—the Parent Society? Great has been the number, and let us express a hope that their success will be commensurate with their endeavours, and be fully equal to our own. At the last general meeting, too, we were re-christened; our title being altered from "Chemists' Assistants' Association" to "London Chemists' Association." As the march of intellect progresses onward, so must we advance with it, and it was deemed advisable to alter our name, in order that we may be enabled to enroll upon our list of members the names of proprietors of businesses, who, by our old title, were excluded from participating in our weekly meetings. Let us, then, wish every success to our Society under its new name; let us hope that our object will be fully obtained, that employers will be more frequently brought into contact with employed, and that either may be taught the wholesome lesson, that the best interests of each will be served by their working mutually for the benefit of both. Let us hope, also, that we shall emulate the example of the Society under its old title by every week adding new names to our list, and becoming every year of our existence a greater boon, a greater favourite. As regards us personally, let us by every means endeavour to improve ourselves, never forgetting that excellent adage, "Knowledge is no burden." Some of us are sent into the world for one thing, some another,—it is our lot to have to prepare medicine for the afflicted; let us be above the temptation (for the unscrupulous advantage of an extra profit) of ever supplying an impure chemical or an inferior drug; let us, by every means in our power, be careful and just in our dispensing of medicines; let us take care that no act of thoughtlessness or carelessness should be the means of a suffering creature's soul being hurried into eternity—that we may be spared the pain of causing the widow's broken heart, or the orphan's silent tear! Let us, as much as lies in our power, contribute to the comfort of our fellow-chemists less fortunate in life's prilgrimage than ourselves, by extending the hand of friendship to them through the medium of the Benevolent Fund of the Pharmaceutical Society. And at length, when we approach our own journey's end, may we be justified, on looking back upon our past lives, in thinking that we have, to the best of our ability, accomplished the mission for which we were designed, and we shall then have the satisfaction of knowing, that, as far as lay in our power, we have done our duty to both God and man.

Arrangements for the Thursday evening meetings from December, 1869, to April, 1870, to which members may introduce friends.—January 6th, an Address by Mr. Foster D. Downes; January 20th, Mr. G. Brownen, on the Proximate Analysis of Plants; January 27th, Mr. T. Trask, on the Physical Properties of Gases and Vapours; February 3rd, Mr. R. J. Jewell, on Carbolic Acid; February 10th, Mr. J. Sands, on Gun Cotton; February 17th, Mr. W. Walker, on Applied Electricity; February 24th, Mr. E. Beynon, on Botanical Geography; March 3rd, Mr. J. T. Porter, on Agricultural Chemistry; March 10th, Mr. G. Brownen, on the Ultimate Analysis of Plants; March 17th, Mr. J. H. Jessop, on Oleography; March 24th, Mr. S. W. Pickering, on Chloroform; March 31st, Mr. E. Weaver, on Medicinal Wines. The papers are followed by discussions. The proceedings commence at 9.30.

The Officers for the Session are: President, Mr. R. J. Jewell; Vice-President, Mr. J. Sands; Hon. Secretary, Mr. Erasmus Beynon; Treasurer, Mr. Foster D. Downes; Commitee, Messrs. Parsons, Peal, Porter, Walker, and Weaver.

MANCHESTER CHEMISTS AND DRUGGISTS' ASSOCIATION.

The third monthly meeting of the Session was held in the Memorial Hall, on Friday evening, January 7th.

Tea, coffee, and refreshments, having been arranged on side tables, the Members and Associates enjoyed a pleasant half hour's conversazione previous to the commencement of the more important business of the evening—Mr. Siebold's Lecture. Mr. Councillor Brown having taken the chair, Mr. S. Siebold, in commencing his lecture on the "Atomic-

Theory, and the Modern System of Chemical Notation," referred to the great changes which the science of chemistry has undergone within the last fifteen years. He next dwelt upon the volumetric composition of hydrochloric acid, steam, and ammonia, and laid particular stress on the fact, that the smallest quantity of any gaseous compound which can be produced from its elementary constituents measures two volumes. He also reviewed the ponderal composition of the three substances named, and pointed out the identity of the combining weights with the vapour-densities of nearly all elementary substances. He next spoke on the law of combination in definite and unalterable proportions, as well as on combination in multiple proportions, and then proceeded to the consideration of the divisibility of matter. He defined molecules as the smallest particles of matter resulting from a division by mechanical and physical means, and atoms as the smallest particles of elementary substances resulting from the chemical decomposition of molecules. He explained that all molecules must be of equal size, and showed that the atoms of elementary substances fill half the space of a molecule, with the exceptions of phosphorus and arsenic, whose atoms are one-fourth of a molecule, and mercury and cadmium, whose atoms are equal to a molecule. As the smallest particle of an elementary substance, which can exist in the free state must be a molecule and not an atom, he argued that the molecules of elementary substances, like those of compounds, must be composed of two atoms. A molecule of hydrogen would, therefore, consist of two atoms of hydrogen, and, in a like manner, the molecules of other elementary substances would also contain two atoms, except the molecules of phosphorus and arsenic, which must consist of four atoms; and those of mercury and cadmium, whose molecules and atoms are identical. The lecturer then compared matter in the solid, liquid, and gaseous state, and spoke of molecular attraction or cohesion, as being most active in solids; and of molecular repulsion, keeping apart at longer distances the molecules of a gas. The theory that the spaces between the molecules of a gas are occupied by spheres of latent heat, he supported by strong and convincing arguments, based on experiments. After dwelling at some length on quantivalence, or the atom-fixing and atom-replacing power of elementary substances, Mr. Siebold pointed to the importance and enormous utility of the modern molecular and atomic theory, laying stress on its services to organic chemistry, and to the artificial preparation of organic substances from their elementary constituents; and concluded by thanking his audience for their kind attention and indulgence he met with.

Notwithstanding the fact that Mr. Siebold is a German, and was not speaking his native language, he delivered his lecture with the utmost fluency, and entirely dispensed with the use of notes. A very complimentary vote of thanks, proposed by Mr. Halliday, and seconded by Mr. W. H. Waterhouse, was carried with acclamation. At 3 p.m. on February 4th, Mr. Wilkinson will read a paper on the additions to the Poison Schedule, and the proposed regulations as to the keeping of poisons.

BISHOP TEMPLE ON SCIENTIFIC STUDIES.

At the distribution of prizes on Saturday, the 8th inst., at the Plymouth School of Science, Bishop Temple, in reply to a vote of thanks said, that how he wanted to be thanked was by their promoting the school. Could they not show the reality of their thanks by erecting a building fit for conducting such a school? It would be a credit to the town, and would attract more pupils. It would be a pleasure to him if hereafter he could say that in some small degree the success of that capital school at Plymouth was due in part to the encouragement he was able to give them when he went down there. He did not want to press on them to go faster than they felt they ought to go, but he wanted to convince them that they ought to go on, and, when convinced, he hoped their conviction would take a practical shape. For, proceeded the Bishop, I feel that the study of science is really of the greatest value. I spoke just now of the value it is in our industrial country. I spoke of its giving in the easiest and directest possible way real cultivation to the working men, of its supplying working men with the study they required in efforts of their own to educate themselves. I should now like to say just one word more, that is, that I have a very real conviction that all this study of science and art comes from the providence of God, and that it is in accordance with His will that we should study His works; that as He has given us a spiritual revelation in His Word, so also has He given us a natural revelation in His creation, and that when we look back upon the records of His spiritual revelation itself we shall find evidence enough that He puts a real value on scientific studies; for we know that in the pages of the Bible the wisest of men, supplied with wisdom by God's own order, was the King of the Hebrews, Solomon. And what did his wisdom consist in? We find that he did not confine himself simply to the study of spiritual revelation. He spoke of trees, we are told; he evidently studied botany, far and wide. In fact, he was precisely doing, when he acquired the wisdom which God gave him, what this school is intended to do for you. I am convinced that God's word has nothing to lose but, everything to gain, by a true and careful study of God's works. The more light we get, the more true discipline of our intellect by the study of all those things that God has scattered in such profusion around us—all their wonderful order and wonderful beauty—so much the better shall we be able not only to serve Him in our affections, but also understand the meaning of His spiritual revelation. I am convinced that all light, of whatever kind, is good, and comes from God—that all knowledge comes from Him, and can be used in His service—that nothing that really adds to our knowledge of the world is for one moment to be despised; but, on the contrary, it should be the effort of myself, and of all who undertake to instruct our brethren in religious truth, to show that we feel that religious truth and secular truth are not only capable of being reconciled, but really come from the same God, who is the God of all truth. Therefore, so far from desiring that there should be anything dividing those two, I should wish that every effort should be made by all who are concerned in spiritual teaching to pervade the study of science with their own religious feeling. You are to study science with the constant recollection that it is God's works that you are studying—with your mind perpetually lifted up towards Him, who is the author both of order and of beauty; you are to study the laws of nature with the perpetual recollection of the great law given, and to remember that it is not only possible, but sure, that both science and religion will gain by their union. I feel, therefore, that I am in my place to-night as Bishop of this diocese in giving a word of encouragement to those engaged in such studies as belong to this school, and I only hope that anything I have said may really bear some little fruit—that, if possible, your school will be succeeded by so great a development that you will smile when you look back to this meeting some years hence, and say, "What a deal we made out of a very small matter."

BANKRUPTCY.

IN RE W. R. BARNES, SODA-WATER MANUFACTURER, TAMWORTH.

A meeting for last examination and discharge, attended by Mr. Griffin, for the assignee, was held before Mr. Commissioner Sanders, at the Birmingham Bankruptcy Court, on the 31st ult. Mr. Griffin explained that the balance sheet had been filed a day too late. The Commissioner: that cannot be remedied now; it must stand over with protection to the 20th January. This matter will be dealt with by the Registrars.

POWELL AND PENNY, ALKALI MAKERS.

At the Bankruptcy Court, Liverpool, on the 20th ult., there was a sitting for the last examination and discharge of their bankrupts, who carried on business at Widnes. The accounts disclosed joint liabilities £3,644, with assets *nil*, except property in the hands of creditors, £385. These liabilities were in respect of the balance of a composition of 5s. in the pound covenanted by the bankrupts in August, 1868, to be paid by three equal instalments, but not carried out by them, the first instalment only having been paid to some creditors. The total liabilities at the time of executing the composition deed were £29,900. The bankruptcy was attributed to the mortgagee of the works having foreclosed and distrained upon the property, and sold it at a great sacrifice. Mr. Etty, who appeared for the assignee, submitted the bankrupt Powell to a short examination in explanation of his accounts, and he was afterwards allowed to pass his examination and take an order of discharge. The other bankrupt, Richard Penny, did not surrender, and at the rising of the court was proclaimed with the usual formality.

IN RE D. BOUCHER, CHEMIST, BEWDLEY.

A meeting for last examination and discharge of the bankrupt was held on the 31st ult., before Mr. Commissioner Sanders, at Birmingham, and this was the last of the immense number that came under His Honour's jurisdiction, the new Bankruptcy Act coming into operation on the 1st inst. Mr. Griffin appeared for the trade assignee, and Mr. Corbitt, of Kidderminster, appeared for the bankrupt. Mr. Griffin stated that it was a matter for consideration, between the assignees and the bankrupt's solicitor, whether an application should not be made to dismiss the petition, in order that a creditors' petition might be filed under which certain transactions might be reached. The bankrupt's solicitor, in whom we have every confidence, promises to assist us in every way to recover the property that has been disposed of, and he did not oppose the present petition or resist the order of discharge. Mr. Corbitt said he promised to render every assistance, and he would do so. Bankrupt received his order of discharge.

LAW AND POLICE.

IMPORTANT PROSECUTION UNDER THE PHARMACY ACT.

At the Marlborough-street Police Court, on the 7th inst., Mr. McCall, chemist, of 1, Little St. Andrew-street, appeared to two summonses—the first charging him with unlawfully dispensing a prescription containing strychnine without the prescription being labelled with the name and address of the seller, and without the name of the purchaser being entered into a book kept for that purpose; and the second, for unlawfully selling a certain poison by retail without the wrapper having the name of the poison and the name of the purchaser on it. Mr. Flux, of the firm of Flux, Argles, and Rawlins, on behalf of the Pharmaceutical Society of Great Britain, appeared to prosecute. Mr. Beard was for the defendant, and, before the evidence was gone into, said if it was proved that the poisons were sold by the defendant he would plead guilty. Mr. Bremridge, secretary to the Pharmaceutical Society of Great Britain, said on the 9th of December he went to the shop of the defendant and presented a prescription containing strychnine. The prescription was dispensed by some one in the shop, but he could not say whether it was by the defendant. The mixture, as he received it, he now produced; it had been examined and found to contain strychnine. His name and address could not have been known, as no one asked him for them, nor was any entry made in a book. He did not find the defendant's name as a chemist or druggist on the register. Mr. Beard here put in a book and asked witness if that was not the kind of book usually used by chemists. Mr. Bremridge said the book produced was the book commonly used for articles sold, not for articles dispensed. Such a book did not apply to his case. The present was not an accidental omission, for he found the defendant had been systematically sending out poisons without complying with the Act of Parliament. Had the defendant been a member of the Pharmaceutical Society he would still have been bound to enter the article, and to put name and address on the label. Mr. Beard would admit that the defendant was not a member of the society, but he was a thoroughly-qualified person, as he had been in business for twenty-five years. In the present case he would also admit that the defendant did omit to make the entry as required. There was no motive for this omission; the trifling profit on the articles could be no inducement not to make the entry. It was a casual oversight which would occur in business, and was nothing beyond the forgetfulness of the moment. The defendant was not aware of what was required, he very much regretted what had occurred, and was sorry he had made himself amenable to the statute. He trusted that only a nominal penalty would be inflicted, on the defendant's assurance that he would be more careful in future. Mr. Knox said before coming to a decision he would hear the other summons. Police-constable Haynes, E 185, proved making the purchase of a pennyworth of oxalic acid at the defendant's shop, No. 1, Little St. Andrew-street, Seven-dials. Mr. Knox referred to the defendant's book, and said he found no entry of the sale. Mr. Beard said the packet would be found labelled "poison." The reason the defendant's name did not appear on it was because he had used an old label which was too small. The defendant had supplied himself with new labels, and everything would be found regular. Mr. Flux did not desire to press hard for punishment, the object of the proceedings being to caution the defendant and others, and to obtain a regular compliance with the Act of Parliament. Here was a bottle of strychnine and a quantity of oxalic acid sufficient to poison a hundred people sold in an irregular way. The society desired to protect poor people. He did not think it could be considered as a casual oversight on the part of the defendant. The defendant, knowing he was not a member of the society, called his shop a "medical hall," and did not disclose his name, no name being on the place. This was the third instance in which the defendant had sold poisons without proper precautions, as it had been found necessary to make arrangements three times in order to get the defendant's name and address. It was not for a vindictive purpose that these proceedings were adopted, but for the protection of the public, and especially the poorer portion. Mr. Beard said on the third occasion it would be seen that the defendant used the new labels with his name and address on them. Mr. Knox would only say with reference to a case of this kind, that some of the largest chemists were in the neighbourhood of the court, and on inquiry he found that in making up or dispensing every point required by the Act was strictly complied with. The poisons were kept in a back room, and two of the assistants went together to make up the mixture, after which the particulars were entered into a book. That was the care taken of our lives, but indeed it was likely the lives of the rich would be better taken care of than the lives of poorer people. He thought the defendant had been guilty of something more than negligence. It appeared to him from the evidence that it rather amounted to habitual carelessness. There must be proper protection for poor people, and he should therefore call upon the defendant to pay a fine of 40s. and costs.

CARELESS USE OF SHEEP-DIPPING PREPARATIONS.

A case of considerable importance has been brought before the County Court at Williton, Somerset. A farmer named Pile sued one William Crocombe to recover £50, part of certain damages sustained by the improper and unskilful use of a preparation used by him in dipping plaintiff's flock of over 600 sheep. Plaintiff proved that his sheep were dipped by defendant on the 25th of August last, and two days afterwards 70 of the sheep were found dead, and within a week 200 died. Defendant refused to make any compensation, and suggested that the plaintiff caused the disaster by adding a certain quantity of powder to the wash without defendant's knowledge at the time. His Honour, in giving judgment for the plaintiff for the full amount claimed, with costs, took occasion to caution persons against carelessly using, or allowing to be carelessly used, a deadly poison such as the powder in question contained, the principal ingredient being arsenic. He had no doubt the defendant was liable for the whole of the loss.

INFRINGING PHARMACY ACT IN OLDHAM.

On the 17th ult., at the Oldham County Court, a case was brought under the Pharmacy Act, 31 & 32 Vict. cap. 121, to recover £5 from James Harwood, chemist and druggist, Rochdale-road, Oldham, "the amount of penalty incurred for taking, using, or exhibiting the name of chemist and druggist, contrary to the provisions of the 15th section of the Act." Mr. Elias Bremridge, secretary to the Pharmaceutical Society of Great Britain, was plaintiff, by the authority of the said society, and the case was conducted on his behalf by Mr. Flux, of London. Mr. C. E. Blackburne appeared for the defendant.—Mr. Flux stated that this was the first action that had been brought under the new Act, but there were precedents as respected penalties under the Pharmacy Act.—The Judge said it would be more satisfactory to him, if it was a question of general law, if the penalty was sued for in one of the superior courts.—Mr. Flux said the Act threw the suit expressly into the County Court. They could not go into a higher court. The 15th section of the new Act said that the penalties thereunder "may be sued for, recovered, and dealt with in the manner required by the Pharmacy Act for the recovery of penalties under that Act." Again, the Pharmacy Act, section 12, said :—" Such penalty might be recovered in the name and by the authority of the Council of the said Society, by plaint under the provions of any Act in force for the more easy recovery of small debts and demands.—His Honour questioned the jurisdiction of the Court.—Mr. Flux said there had certainly been no convictions under the Chemists' Act, but under the Pharmacy Act penalties had been recovered in county courts. He had with him a report of the proceedings in one case.—His Honour: Well, but has that decision, or the assumption of jurisdiction by the county courts, been recognised by the courts above? Has it been appealed against or objected to? —Mr. Flux: By no means. It has never been called in question, neither by any court nor by any party, and I submit that the words are perfectly distinct.—After a long discussion upon this point, the Judge next raised the question as to the party by whom these cases should be brought into Court. He held that in this case the Pharmaceutical Society could not proceed for the recovery of the penalty without the authority of the Attorney-General. The case must stand over upon his (the Judge) calling upon the plaintiff to produce such authority.—Mr. Flux: Does your Honour express any doubt respecting the meaning or words?—The Judge: I don't want to have a discussion here for curiosity. I may be wrong, but I am of opinion the Society has no right to sue. This penalty, according as I see by the Act, must be paid into the imperial exchequer.—The case was ultimately adjourned on the understanding that Mr. Flux should apply for the fiat of the Attorney-General authorising it to be heard in that Court.

ROBBERY BY A PACKER.

At the Hull Police Court, on the 29th ult., M. McDonald, formerly a packer in the service of Messrs. Lofthouse and Saltmer, druggists, Hull, was brought up on remand, charged with stealing a large quantity of mustard, citrate of magnesia, baking powder, and other goods, the property of the firm. A part of the purloined property, amounting to £2 10s., had been recovered. The prisoner pleaded "guilty" to the charge, and was sentenced to four months' imprisonment.

THEFT FROM A CHEMIST.

On the 16th ult., at the Worksop Police Court, a man named Daniel Burbridge was sentenced (the case not being pressed) to forty-eight hours' imprisonment, for stealing cigars, the property of Mr. Joseph Revill Pennington, chemist and druggist, Worksop.

AN UNLICENSED MEDICAL PRACTITIONER.

At the Borough Court, Bolton, Mr. Douglas has been charged with practising as a surgeon without being registered. Mr. Douglas is in practice in Bolton as a surgeon, having formerly been assistant to Mr. Hampson, surgeon; and he has over his door a sign on which appears "G. B. Douglas, late Assistant to R. Hampson, Surgeon;" and on the window the words, "Douglas's Surgery." In July, 1868, the Secretary of the Bolton Medical Association called Mr. Douglas's attention to the fact that he was not qualified, and asked for an explanation. Mr. Douglas said he intended to qualifiy in a few months. In July last, Mr. Douglas sued a Mr. Parkes for £33 8s. 6d., "for work done as a surgeon and apothecary, and for medicine and attendance." Mr. Douglas headed certificates, "Nelson Square Surgery." Mr. Douglas contended that it was not necessary to register, and quoted a case (Pedgrift *v.* Chevalier) in support. The magistrates imposed a penalty of forty shillings and costs. They desired that a "case" should be taken on it, as they were not unanimous.

ACCIDENTS.

FIRES AND EXPLOSIONS AT CHEMICAL WORKS.

Early on the morning of the 5th inst. a fire, which at one time presented an alarming appearance, occurred at the tar distilling works of Messrs. Demuth and Company, Oldbury. It may be remembered by our readers that a serious explosion took place at these works about nine months ago, by which two lives were lost. The premises are situated on the canal side, a short distance from which was erected an immense tank which was filled with hot pitch, the refuse of the tar after distillation. Above this tank resting between and on two stout walls was a large vessel containing upwards of 60 tons of liquid, of a non-combustible character. From some cause at present unexplained, this vessel fell into the tank of hot pitch, forcing the pitch out of the tank over a large area of ground into the furnaces. Here it ignited, and in a short space of time the whole of the yard abutting on the canal was covered with a sheet of flame and cleared everything before it rushing hissing into the canal. The men who were at work promptly removed everything of a combustible or explosive character, and fire-engines arriving from Messrs. Chance's alkali works, and several neighbouring establishments were soon at the scene, and rendered efficient service in subduing the flames. The damage is not of a very serious character, only the loss of the pitch, and the destruction of the walls that supported the tank and the roof of a shed. The event occurred just at the time of the arrival of the person who superintends the furnaces in the day-time.

A serious fire occurred on the 2nd inst. at the chemical works of Messrs. Hugh Lee, Pattinson, and Co., near Felling, Newcastle-upon-Tyne, by which property was consumed and wasted to the value of £4,000 to £5,000. The works, through not having the advantage of a river frontage, are of a very important character, covering no less than seventeen acres of ground. The fire was discovered by the watchman to be raging under the sulphuric acid chambers; assistance was soon summoned, and the engine of the company brought into operation. Assistance also arrived from Gateshead, Newcastle, and other places, and the flames were subdued early on Monday morning. Only three of the chambers were destroyed, but the stench of sulphur, the fumes of the charred timber, and the pools of chemical and hot lead made it very difficult to approach near the building. It is stated that there was between 500 and 600 tons of sulphuric acid in the three chambers destroyed.

On the 28th ult. an inquest was held at Manchester, on the body of Peter Hulme, a distiller lately employed at Messrs. Metcalf's chemical works of Miles Platting. It appears that the deceased was engaged on the previous Monday superintending the distillation of naphtha, when an explosion took place by which he sustained such injuries that he died shortly afterwards. The cause of the explosion is singularly supposed to have been the stopping of some of the pipes connected with the still by the frost.

An explosion of a serious character took place on the 29th ult. at the tar and naphtha works belonging to Messrs. Bethell, situated at Gold's Green, near West Bromwich. It appears that the works had been closed for the Christmas holidays, and were started again on the Wednesday morning at the usual hour. About seven o'clock one of the large stills filled with tar capable of holding several thousand gallons, exploded, injuring two men severely, and who have since died from the results of the accident. The manager of the works considers the primary cause of the explosion to be that some of the outlet pipes connected with the still had been frozen, and so caused the accident. The senior proprietor of the works was the original inventor of cyanised wood with creosote. Three accidents have occurred at these works during the last twenty-five years.

CASES OF POISONING.

BY LAUDANUM.

On the 3rd inst. Mr. Taylor, the Bolton coroner, held an inquest on the body of a blacksmith, named William Whalley, who had, while in a state of excitement produced by indulgence in drink, taken six drachms of laudanum. The deceased went to the shop of Mr. Walter Ainscow, chemist, Deansgate, on the afternoon of Friday, and asked for 4d. worth of laudanum. Mr. Ainscow sold it, cautioning the deceased that ten or twelve drops was a large enough dose. When the deceased got home he drank the contents of the bottle, which was duly labelled "poison," and then went to sleep. He died at half-past five o'clock the following morning. The druggist admitted that, though a registered druggist, he did not make an entry of the sale, and he sold poison to the man without any witness being present. The coroner referred him to the 31st and 32nd Victoria, cap. 21, sec. 17, which makes it unlawful to sell preparations of opium without duly entering the same in a book, and expressed an opinion that this was one of the class of poisons which it was intended should not be sold without a person being present as a witness, or the purchaser himself being known to the vendor. The penalty for the infraction of the Act was £5 for the first and £10 for the second offence. He also quoted the 138th section of the Bolton Improvement Act, 1854, which renders any person liable to a fine of £5 for selling any virulent poison to any person except in the presence of a witness, the name of the purchaser and the witness to be at the same time entered in a book kept for that purpose. The coroner, while telling the jury that they had no power to make the druggist in this case criminally responsible, said he hoped the public prosecutor would take the matter up.

The following letter referring to the above case has been contributed to the *Manchester Guardian* :—

Sir,—You give in to-day's issue the report of an inquest held by Mr. Tayler, coroner for Bolton, on the body of Wm. Whalley, a blacksmith, who has died from the effects of an over-dose of laudanum. Mr. Ainscow, the druggist who sold the drug, is most unjustly blamed by the coroner, who cannot possibly have read the Act to which he refers. It is quite as extraordinary that the druggist himself should have had such confused notion of its meaning as proved by the meekness with which he bore Mr. Taylor's castigation, and made no effort to prove himself innocent.

The fact is, neither registration of the sale or witness even is required in the case of laudanum or other preparation of opium, only that the bottle be labelled "poison." Mr. Ainscow more than fulfilled the requirements of the law ; he gave his customer advice as to the proper dose, which, unfortunately, was not followed.

In the Act 31 and 32 Victoria, cap. 121, the list of poisons scheduled is divided into two parts,—the first contains those which are to be registered in a book when sold, and the second those which must be labelled "poison." This apparently simple arrangement seems too much for the comprehension of some coroners and country magistrates.

The only responsibility incurred by the druggist who sells preparations of opium, and many other poisons, is now a moral one. Legally, he is not to blame if he does not ask a single question as to their intended use ; and, if Government considers this to be the most satisfactory arrangement that can be devised, it is much to be regretted that the character of a tradesman should be damaged by the inaccurate knowledge of those placed in authority over us.

I am, sir, your obedient servant,
F. Baden Benger,
Hon. Secretary Manchester Chemists' Association.
1, Market-place. January 4th, 1870,

BY POTASSIUM CYANIDE.

A shocking case of accidental poisoning occurred at Newcastle-under-Lyme on the 31st ult. Mr. M'Nish, Governor of Stoke-on-Trent Workhouse, had resigned his office on account of ill-health, and retired upon a pension, taking a house in Newcastle, to which he removed only on Thursday last. On Friday he went to spend the evening with his wife and daughter at the house of a relative in Newcastle. This relative is a teetotaller, and Mrs. M'Nish took with her a small bottle containing, as she supposed, gin, for her husband's use in the course of the evening. About nine o'clock Mr. M'Nish, who was in good health and in unusual spirits, sat down to enjoy his pipe and a glass of gin-and-water. He poured a small quantity of the liquid from the bottle into a glass, and filled it with water. He took a draught, and spluttering out upon the floor all he had not swallowed, asked if poison had been given him. It was then discovered that the bottle contained not gin, but cyanide of potassium. In a state of convulsion he was led to a sofa, a doctor was sent for, and strong remedies were applied for the ejection of the poison. This was effected, but the retching was so violent as to produce exhaustion, which ended in death an hour afterwards. It appears that a friend, who is an amateur photographer, had, just before the removal from the workhouse, photographed as *souvenirs* the governor and his family and different parts of the establishment, and by some mistake had left at the workhouse a bottle of cyanide of potassium, which in the hurry of removal became mixed up with some bottles belonging to Mr. M'Nish, and was supposed by Mrs. M'Nish to contain gin. The bottle was not labelled, and no examination of its contents had been made. The unfortunate man was fifty-six years of age, but of infirm health.

[In the *Times* the poison was consistently described as iodide of potassium.]

GOSSIP.

Dr. Paul Bert has been nominated Professor of Physiology in the Faculty of Sciences in Paris,

The alms-box for the Samaritan Fund of St. George's Hospital, at Tattersall's, was lately opened after an interim of twelve months, but *not a single farthing* was found in it.

The *Journal of the Quekett Microscopical Club* is to be discontinued. The proceedings of the society will henceforth appear in the form of an annual volume of *Transactions.*

The last number of Mr. Erasmus Wilson's *Quarterly Journal of Cutaneous Medicine and Diseases of the Skin* appeared on the 1st inst., having had a career of about three years.

M. Wurtz, the celebrated chemist, has been elected Vice-President of the Academy of Medicine in Paris for the year 1870.

We learn from *Nature* that M. Bouis has been appointed Professor of Toxicology at the Upper School of Pharmacy, in Paris.

On the 3rd inst. the rules and orders under the New Bankruptcy Act were issued. There are "319" rules, and numerous forms to be used in carrying out the Act. The fees to be charged are set forth.

The Mastership of the Mint, the office held by the late Professor Graham, is not to be filled up. The present Deputy-master, Mr. Fremantle, will preside over the establishment, which will be attached to the Treasury.

According to the *Veterinarian,* only two counties in England have escaped the visitation of foot and mouth disease ; whilst Scotland and Wales have suffered severely, as also Ireland, where the contagion is said to be spreading.

In a fire which broke out on the 16th ult. at No. 1, Chiswell-street, Finsbury, considerable injury was done to the premises of Messrs. C. H. Warner and Co., chemists, 7, Finsbury-square.

On the 11th ult., Mr. John Beadon, a highly respected and well-known chemist of Taunton, died suddenly. Mr. Beadon, it seems, was unfortunately smitten with a paralytic seizure, which was in a short time followed by an attack of epilepsy, the end being fatal.

In a letter to the *Times,* Mr. George Barnard corrects Dr. Bence Jones's statement that the family of Michael Faraday received public relief. He says that the Faradays never obtained assistance from the public, though at the time when Michael was nine years old they were undoubtedly poor, and bread was very dear.

Four free medical scholarships are to be established in connection with the Medical Benevolent College at Epsom. The holders will receive a free medical education at the University College, London, and an exhibition of £50 per annum for four years. Dr. Carr, of Blackheath, who origiiated the scheme, has contributed £1,000 to the fund, and some £2,000 has since been received.

On the 13th ult. Miss Garrott passed the third examination for the M.D. degree of Paris. The subjects of the examination were chemistry, zoology, natural philosophy, and botany. The examiners were MM. Wurtz, Baillon, and Lutz. On Christmas-eve she passed the fourth examination. The subjects were medical jurisprudence, materia medica, and hygiene. The examiners were MM. Tardieu, Bouchardat, and Isambert. The note on each examination was "Bien satisfait."

At the weekly meeting of the Worcester Board of Guardians, held on the 6th inst., one of the members (Mr. Minchall) drew attention to the circumstance that while going through the financial statements the previous week, the bill of the chemist, amounting to £5 3s. had been taken exception to because the whole of the medicine was charged to them, and on examination they found that ingredients besides quinine had been charged, contrary to the regulations of the board. He was, however, very happy to say that the chemist had kept a distinct account as to the ingredients and the quantity of quinine, and he was thereby enabled, with convenience to himself, to subtract from the total the amount charged for ingredients, so that his bill was reduced from £5 3s. to £3 13s. 6d.

GAZETTE.

BANKRUPTS.

Abbott, **Joseph Ortzen**, chemist and druggist, Nottingham.
Barber, C. W., dentist, Cambridge-road, Hammersmith.
Baretta A. J., herbalist, Homer-row, Marylebone-road.
Bringloe, **John**, surgeon, Cold Harbour-lane, Camberwell.
Chapman, **James**, South Hornsey, late manager to the Alum and Ammonia Company.
Cowpe, M., chemist, Delph, Yorkshire.
Crews, **Charles**, manufacturing chemist, Slapton, Devon.
Dabbs, **Frederick**, dealer in druggists' sundries, Liverpool.
De Lisle Allen, A. B, surgeon, Kilburn-park-road.
Hawkins, W. H., dry broker, Liverpool.
Hemsley, **William**, surgeon, Peterborough.
Homer, **Absalom**, chemist, Bedworth, Warwickshire.
Kelly, **Thomas**, chemist, Northampton.
Mitchell, F. T., surgical instrument maker, South street, Islington.
Moss, **John**, veterinary surgeon, Plaistow.
Nind, P. P., surgeon, Torquay.
Powell, **George Benjamin**, surgeon, Newchurch.
Rice, R. E., chemist, Old-street, St. Luke's.
Sadler, J. W., dentist, Burton-on-Trent.
Shaw, **Edward Thomas**, surgeon, Cross-street, Islington.
Smith, **William Abbott**, medical practitioner.
Sutton, T. E., chemist's assistant, Spencer-street, Liverpool.
Temple, **Peter**, druggist, Darlington.
Wiltshire, **Thomas Daniel**, veterinary surgeon, Newport, Monmouthshire.

PARTNERSHIPS DISSOLVED.

Bass and **Bass**, manufacturing chemists, Hatton-garden.
Burn and **Scruton**, chemists and druggists, Hull and Boston.
Bussey, J., and J. **Ellis**, cork merchants, Cousin-lane, Upper Thames-street.
Crawley, C., and F. H. **Phillips**, manufacturing perfumers, Cannon-street, City.
Duke, A. A., and J. S. **Turner**, physicians, Anerley and Upper Norwood.
Durrant, **Frederick**, and **John Rose Cousins**, chemists, Dorking.
Manners, R. D., G **Pringle**, and B. **Clegg**, oil merchants, Manchester.
Simpson and **Allingham**, surgeons, Old Kent-road.
Teale and **Hayward**, surgeons, Leeds.
Vine and **Cartwright**, veterinary surgeons, Lewes.

Trade Memoranda.

We have before us the Dispensing and Retail Price List of the Midland Counties Chemists' Association. This list, which we believe has been adopted, at least to a considerable extent in Birmingham and the neighbourhood, besides a fair and moderate tariff for dispensing charges, gives an exhaustive scale of prices for the retail sale of nearly all the articles of medicine to be found in a chemist's shop. Lately we have had several occasions to notice the establishment of these tariffs, and we shall watch their progress with considerable interest. We do not underestimate the advantages which would result if the chemists and druggists, even of each locality, could be thus got into a sort of happy family. But considering that in all large towns there must *and should* be varieties of charges to meet the wants of the various classes of inhabitants, and remembering further the proneness of tradesmen in some quarters to relax their prices for the sake of gaining, or at least of saving the loss of a customer, we fear we must prophesy the ultimate shipwreck of these efforts to regulate a most irregular tariff. The Midland Counties Chemists' Association have done their work well, but they have affixed a motto to the title-page which expresses as we think the principle which will annul their efforts, "Si non possis quod velis, velis id quod possis."

An important firm in another business—Messrs. Allan and Co., wholesale milliners, etc., of Cheapside—have ventured on an experiment which will interest wholesale houses out of the commercial circle to which they themselves belong. In a circular lately issued they inform their customers that, upon mature consideration, they have resolved to discontinue being represented by travellers. They add: "We are induced to take this step through the great and increasing expense attending this mode of doing business, all of which must be defrayed by the extra profit put upon the goods. The facilities of access to London now offered by the various railways, combined with the rapid development of the telegraphic and postal systems, to a great extend tend to render travelling an unnecessary expenditure." We understand that Messrs. Allan and Co. have hitherto employed some six or eight travellers, and, as their business is one of constant change, consequent upon the variableness of fashion, it seems to us that the experiment they have inaugurated will severely enough test the question whether, in these days of advertisements and other facilities of communication, travellers might not become an institution of the past. Certainly, if all firms were to dispense with them, none would suffer; for, "if the mountain will not go to Mahomet, Mahomet must go to the mountain." The export trade of Great Britain is carried on almost entirely without this expensive aid, and is no worse for the deprivation. Wholesale houses, as a rule, do not sufficiently appreciate the fact that an advertisement is a traveller calling upon many thousands of customers almost at the same moment, and doing the work silently, but surely, as the almost universal success of advertising firms proves.

Stone's quinine wine is becoming a favourite specimen of this elegant pharmaceutical preparation. It is a very superior wine, preserving the fine flavour of the orange in a marked degree.

Mr. Frank White's tender for drugs (£110 14s.) was accepted by the Nottingham Board of Guardians for the ensuing quarter.

The partnership carrying on the old-established wholesale and export drug business at 16, Coleman-street, under the style of Burgoyne, Burbidges, and Squire, has been dissolved. Mr. William Stevens Squire is the outgoing partner. In all other respects the firm will remain as before, and the business carried on as usual, with the same efficient staff.

We direct the attention of chemists and druggists to the prospectus of the formation of a company to carry on a large soda-water trade in the west of England, which appears in our advertisement pages.

The Editor of the "Chemists' and Druggists' Almanac" wishes us to mention the accidental omission of H. Turner and Co., of 77, Fleet-street, from the list of London wholesale homœopathic chemists appearing in that work. A correspondent also remarks the omission of the London Homœopathic Hospital, Great Ormond-street, W.C., from the list of these institutions.

Messrs. Lynch & Thornton have again extended their premises, to allow for the increase of their business.

The Sheffield Board of Guardians have accepted the tender of Mr. E. Barber for the supply of drugs and chemicals for three months.

The Leeds Board of Guardians have accepted the tender of Mrs. Fourness and Son, for the supply of drugs for six months.

The guardians of the Dudley Union have accepted the tender of Mr. Baker for the supply of drugs.

The guardians of the Nottingham Union have accepted the tender of Mr. Frank White for the supply of drugs for the ensuing quarter, and that of Mr. Thompson for soft soap, at 23s. per cwt.

NOTES AND QUERIES

The following receipts are printed in the December number of the *Pharmacist* (Chicago):—

PAPIER FAYARD (GOUT PAPER).

Take of Cantharides, in powder, one troy ounce.
Euphorbium, in powder, half troy ounce.

Mix, and exhaust with eight fluid ounces of strong alcohol; add this percolate to Venice turpentine, three ounces; white rosin, four troy ounces, previously liquefied by heat. Spread on paper, by means of a brush, while warm.

AROMATIC CACHOUS.

Take of Extract of liquorice, three troy ounces.
Catechu, in powder,
White sugar, in powder, of each, a troy ounce.
Tragacanth, in powder, half a troy ounce.
Oil of cloves, one fluid drachm.
Oil of cassia, half fluid drachm.
Oil of nutmegs, ten drops.

Make a mass with water, and divide into one-grain pills.

CASTOR OIL POMADE.

Take of Spermaceti, two and a half ounces.
White wax, one ounce.
Castor oil, four pints.
Oil of rosemary,
Oil of verbena,
Oil of bergamot,
Tinct. curcuma, of each, half an ounce.

Melt the spermaceti and wax; add the oil, and stir in the perfume.

COCOANUT OIL POMADE.

Take of Cocoa butter, six ounces.
Castor oil, two pints.
Oil rose geranium, one drachm.
Oil orange, one and half ounce.
Tinct. curcuma, two drachms.

Proceed as in the above formula.

G. Robinson (Hamilton, Victoria).—The back numbers were out of print when your order was received.

Chambers (Nottingham).—Apply to the secretary of the Veterinary College, College-street, Camden Town, who will gladly furnish you with the required information.

Correspondence

PRESCRIBING AND DISPENSING.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Sir,—When I last addressed you respecting the relationship existing between the medical profession and chemists and druggists, my views were considered premature, and calculated to disturb the harmony so happily effected by legislation. But twelve months have barely passed away, and the subject, after being considered by many, is looked upon as the only foundation for a national system of pure pharmacy. I rejoice, then, to find that the very able and interesting paper read by Mr. Hampson before the Manchester Chemists' Association on the same subject has been noted by yourself, as well as by the editor of the *Pharmaceutical Journal*, and I hope that it will lead to action by those in authority, so that something more profitable than mere compulsory education may be derived from the amended Pharmacy Act of 1868. You have had ample proof in time gone by that the subject of prescribing and dispensing is one that I have taken great interest in, for the reason that, unless an alteration is made in the present system, it is hopeless to expect any improvement in the status of the chemist. Educating the trade is but a hollow mockery unless an effort is made to enable the student in after life to earn his living in a legitimate manner. But so long as a few leading houses, in town, alone enjoy the monopoly of dispensing, and the medical profession generally supply their own medicines, the majority of the trade will eke out a miserable existence, by prescribing when they have a chance, and selling anything to earn a penny. The chemist must live, and if by no other means, by prescribing. When surrounded by surgeons who give him no employment he can scarcely be blamed for trespassing on the medical domain. While extenuating a departure from the chemist's legitimate calling, I by no means support the practice, but, with Mr. Hampson, condemn *indiscriminate prescribing.* And I also agree with him, that it is the duty of the Council to advance trade interests, by making this question known to the medical body; although I very much doubt whether such could be attempted by the present Council, constituted as it is; for, if report speaks truly, one, holding an exalted position, has been supplying the co-operative stores with drugs, and others are hand-in-hand with leading physicians. Abuses creep into every society where there is no independent publicity given to its proceedings; and unless the press is aware of the irregularities which take place, the evil goes on increasing, and without a remedy. There is no greater curse in the trade than the alliance between the profession and certain leading dispensers; and the only way to destroy this illegitimate business is by exposure in such journals as really are the organs of trade. The medical world has its press, and nobly it performs its duty. Every week proof is given, by its combating everything that does not advance the standing and gain of its clients; and not the least among its duties is to assail the druggist, who, unfortunately, is not adequately defended. Deceived by the assertion that genuine medicines are not commonly kept by chemists, persons are easily induced to follow the direction of the prescriber. In many cases such directions are given with honourable design, the prescriber having no other wish than that the medicaments ordered should be pure. But it is known to every one that this wish is too often alloyed with selfish considerations, and I venture to say that medical men, as a rule, are actually dissatisfied with the fees they receive for advice, and expect an allowance from the dispensers of the medicines ordered. Owing to this unholy alliance, one house may receive a hundred prescriptions in one day, whilst there are a hundred houses that do not receive one in a week. I could enumerate half a dozen cases that have come under my immediate notice of late, which has occasioned loss to me, both in pocket and reputation, from no fault of my own, but from the instructions of the prescriber having induced my customers to obtain medicines from certain favoured houses; and, as a matter of course, the same injury is inflicted upon all suburban chemists, whose customers visit the stronghold of the fashionable prescriber. The grievance does not apply to prescriptions only; for, when a patient has had a doubt put into his mind *as to the ability of his family chemist, or the purity of the drugs kept by the latter*, the same suspicion naturally extends to everything else in the pharmacy, and the patient imagines that castor oil, ext. carnis. isinglass, cod-liver oil, and other common articles, can only be had genuine in the locality indicated by the physician. What are chemists to do when the ground is thus cut from under them?

I will notice one case that came to my notice last month, to show that I have not exaggerated the evil I complain of, and I can supply you, if you like, with many others.

A customer for whom I have dispensed for twelve years had occasion to seek the advice of a rising medical man, who has distinguished himself by his ability in medicine as well as in literature. I will not presume to criticise his method f prescribing, although his practice of changing the precriptions every day seemed to show that his mind was not uite fixed upon any specific, and that he hoped, by going hrough the Materia Medica in regular order, to arrive ventually at the right thing. Possibly, as he directed his atient to take the papers each day to a gentleman conected with him by close ties, his exhaustive method may ave been truly systematic. On the first day of consultation, *even* prescriptions were given, and the patient was requested o take all of them, including one for glycerine soap, to a hemist in Oxford street; but owing to an unusual amount f perverseness on the part of this patient, the prescripion for soap was the only one sent to Oxford street, and the est received my stamp. Upon seeing this stamp next day, he prescriber expressed much regret that his desire had not been complied with, and very grave remarks ensued upon the injury that would arise from inferior drugs, or ncapacity in preparing them. Fortunately, my customer was not of a nervous temperament, but being good natured had the next prescription prepared at the ideal house, and hus gave great satisfaction to her adviser. In one week I prepared 14 prescriptions, and repeated 3, making 17, and during the three weeks of almost daily consultation over 40 prescriptions were written, every one of which would have been taken away from my books had not my customer had as much confidence in me as in a total stranger. Now, sir, I ask, is this legitimate practice? Is it calculated to advance the chemist if these gentlemen of celebrity impugn the ability and probity of the suburban dispenser? By so doing they lead the regular dispenser from the aspirations he has formed, and they compel him to adopt practices that are distasteful to him, and for which he has not been educated. I ask you, sir, to look into this question, as the representative of the general chemist and druggist, and to ventilate the subject; to urge upon those in power to place the chemist in a fair and honourable position, that he may compete with his fellow druggist on equal terms. The discussion which has lately taken place concerning prices and fair remuneration is important, but can never be satisfactorily settled until the dead weight is taken off the majority, and open competition permitted.

I am, sir, yours obediently,
JOHN WADE.

January 10th, 1870.

PRICES AND THE REMUNERATION OF ASSISTANTS.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—In the Chemists' and Druggists' Almanac for the current year, Mr. Hanbury makes a statement to the effect that, "in the remuneration of his *employés*, the pharmacist has to encounter higher rates of payment than those which prevail in other businesses. Nor is this surprising, when we reflect on the importance of the service of a well-trained, intelligent assistant."

Now, it would not be surprising if only the former part of the statement were correct, but I think, had Mr. Hanbury taken the trouble to inquire into the subject of assistants' remuneration he would have found that only in one class of business is the salary less than in ours,—viz., the grocers'.

I might cite several cases in support of my opinion, but will simply give my own.

I have been seven years in the trade—viz., five as apprentice and two as assistant—and am at present obtaining the munificent remuneration of 23s. per week, out-door, whilst an ordinary mechanic can earn nearly double.

By inserting this in your next issue, you will oblige

ONE OF THE UNFORTUNATES.

AN APPEAL TO THE BENEVOLENT.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

SIR,—Will you favour me by inserting in your valuable journal the following appeal:—A retail druggist, whom I have known for some time, has been suffering from cataract of the eyes for upwards of two years. He has undergone five operations, but he has been for nearly twelve months, and is still totally blind. He has a family of nine children, seven of whom are girls. With the aid of many members of the London trade, I am endeavouring to raise a fund to place the wife and daughters in a light business. I shall be glad to reply to any inquiries, and give full particulars of the case. May I invoke the assistance of the benevolent in furtherance of this object? Any subscriptions, however small, I shall be happy to dispose of and acknowledge.

I am, Sir, your obedient servant,
RICHARD CHANDLER.

2, Bucklersbury, E.C., Jan. 10.

[We have made inquiries into this case, and can vouch for the correctness of the statement of our correspondent. Mr. Jacobson, of 38, Walbrook, who is also well acquainted with the particulars, will receive any donations.—ED. *C. & D.*]

ATOMIC FORCE.

TO THE EDITOR OF THE CHEMIST AND DRUGGIST.

SIR,—In reference to the question in my communication to the November number of your paper, "What is the nature and *modus operandi* of this power?" I premise that the power, being an invisible influence, can be known only by its effects; and as these are exhibited through matter, we will notice the nature and properties of matter and the effects produced on it, and thus obtain a knowledge of that power or force and its *modus operandi*.

Matter is material occupying space. It is that which, or that the effect of which, is perceptible by the senses. It possesses form, size, and locality, or position.

Matter is infinitely divisible; hence, as far as the senses are capable of perception, or as far as the mind can conceive, it must be composed of particles, monads, or atoms, infinitely numerous and infinitely minute.

All matter is in motion. The ultimate power producing that motion is the Deity. The proximate effect produced by that power, or cause, and proceeding from it, is an essential, inherent, intrinsic, inbeing, indestructible force in matter or in atoms individually and collectively, which force is identical with that manifested by the loadstones and by certain metals when "magnetised."

Atoms are composed of two essentially distinct classes, both having properties analogous; yet the atoms of each class in their mutual attraction and repulsion independently act upon the atoms of their own class only, and thus are influenced by the dissimilar properties of the other class.

The two classes of atoms are identical with the substances commonly known as hydrogen and oxygen. They may be distinguished as mineral matter, and vegetable or animal matter; or, male, female; or, cold, warm; or, white and blue, yellow and red; or, acid, alkali; one, the mineral, is as gas, the more rare, light and cold; the other, the vegetable, is as gas the more dense, heavy and warm. These classes by their reciprocal action are continually changing from invisible, or transparent, to visible or opaque; from organic to inorganic; from life to death; forming and dissolving, and *vice versâ*. By their attracting force, gases and liquids are converted into solids; by their repelling, solids are converted into liquids and gases.

Water is the most important compound of the two elements; through its agency, direct or indirect, are produced all modifications, all chemical changes of material.

In aqueous solution, or as gas where there may be an excess of the atoms of either class, each by the mutual attraction or repulsion of its like, reciprocates and brings into action its distinguishing properties; and according to the quantity, condition, position, etc., are the phenomena and results.

The characteristics of this influence are specially observable in that mineral called "loadstone" or magnet. A similar force is found in any bar of steel which may be allowed to remain in a vertical position. It is exhibited more powerfully in steel placed in connection with a galvanic battery, which battery is composed of mineral and vegetable matter in solution in such a manner as to decompose the metal by reciprocal action of the two classes of atoms. That action converts the steel into a fixed magnet by imparting to it polarity from the battery. A piece of soft iron will exhibit the same characteristics when placed in connection with the battery, but only partially when withdrawn.

A fine steel magnet, delicately poised, and allowed free motion, will act as a compass needle. In this way that force is more clearly exhibited, and may be most advantageously noticed.

The needle, from its pointing towards the poles of the earth, is adapted to a variety of uses. By placing a bar of soft iron in the same horizontal plane with the compass needle a very slight influence, if any, is indicated; but if held in a perpendicular position and *over* the needle, the "south" point will be attracted; removing the bar to a vertical position *under* the needle, the "north" point will be attracted in like manner. The force is always in proportion to the length and *position* of the bar.

By the application of a magnetic battery, this force is increased in all metals, they, like the iron, exhibiting it only when placed in the proper position to do so. This may be noticed in the various instruments used in telegraphy which become magnets when the operator applies the battery by the use of his "key."

Similar atomic peculiarities are seen in aqueous solutions of metals, wherein a spontaneous and uniform crystalline deposit and reformation of metal takes place. The action in the solution is the same as in the galvanic battery, but the solution having an excess of metal in a different form, the similar particles are attracted, and a reformation of metal is the result. The action is but intensified by the application of a magnetic battery.

Atomic action and its effects are more clearly observable in the electrotype process, or in the formation or growth of the "Philosopher's Tree." It is the process which must have taken place in the formation of rocks, notably the primary, while a variety of mineral matter existed in a watery solution; each genus of each class of atoms attracting its like under the operation of this law, giving to the rocks variety of species, crystalline form and "fibre," all being stratified with the utmost regularity.

This influence, call it what we will, is identical with life and motion everywhere. Hence atomic force is the primary one in nature, and the medium of all dissolution, reproduction, growth, and development.

The surface-soil of the earth is produced by the decomposition of rocks. When combined with vegetable or animal matter and saturated with water, it *spontaneously* produces vegetation in correspondence with the nature of the material, with its surroundings, and its position, as regards temperature, moisture, etc.

The action of atomic force is the same in the formation of vegetable substances as in mineral; any apparent difference is caused by differing conditions of the material of which they are constituted. Minerals may be dissolved and reformed at a low temperature, whereas the vegetable requires a warm temperature and warm atmosphere.

A seed in order to produce its appropriate plant must have a soil corresponding to its nature or appetite, or its vegetation will not appear. From a want of its natural supply and conditions, the seed will go into solution "decay." The material and conditions necessary for the production of the mineral are not necessary for the production of the vegetable, and *vice versâ*.

The vegetable, like the mineral or metal, exhibits its atomic force by attracting its supply from the watery solution. Its branches and leaves manifest polarity, they being all of similar poles repel each other, and thus occupy spaces apart as do particles of iron from the poles of a magnet. Unlike the mineral, the vegetable ascends and assumes the vertical position, because a different material and lighter than the former, and because of the influence of the earth as exhibited in the experiment with the iron bar; yet in its formation the particles are deposited with the same crystalline precision as in the formation of the mineral.

An excess of animal and vegetable matter in watery solution under certain conditions, such as an elevated temperature, produces animal life.

The whole of animal existence is permeated by this atomic power not only in the various parts physically, but as regards classification, instinct, migration, appetite, etc., inclining to that of which formed, "gravitating" towards it by the same law of atomic attraction. The decomposing action of food in the animal similar to the action in the watery solution of the metallic galvanic battery, and to that of the vegetable supply, keeps up the invisible life-force of the animal.

These animals that have more mineral atoms in their composition than others are more susceptible to the influence of this atomic force when applied by a metallic galvanic battery.

The same power, or force, as that of the metal is noticed in the magnetic and mesmeric influence which animals have over each other, each class influencing its like. There are some substances which exhibit more of this atomic force than others; as the loadstone among minerals; the sensitive plant, pitcher plant, and such among vegetables; and the torpedo, conger eel, etc., among animals.

It is the same force and action that causes spontaneous combustion by the combination of mineral and vegetable atoms when in certain favouring conditions; and also spontaneous generation according to the nature and condition of the material as already noticed.

This force pervades the earth as a whole, which, through the aqueous action of its material as in a mineral magnetic battery, is one vast magnet, attracting all bodies on its surface to itself, and exhibiting its atomic influence more distinctly in the case of the iron or the compass needle. It is also exhibited by cold mineral emanations of gas from the poles and mountain tops as poles, gradually diminishing towards the equator, where the emanations of warm gas from vegetable and animal kingdoms predominate. Those two classes coming in contact by the reciprocal action of their atoms, cause atmospheric phenomena.

The magnetic action of the earth is strikingly exhibited on iron ships where its natural influence on the needle is counteracted by the magnetic influence of the ship, the greater influencing the less, the one large magnet conflicting with the other, the terrestrial influence being deranged, and the compass needle "paralyzed" in consequence of the counter-magnetic influence of the material of the ship itself on the needle. All this may be avoided by proper arrangements, but not otherwise counteracted.

It has been observed that water is the medium by which this universal atomic force is brought into play in the forming and dissolving of substances. The ocean, therefore, brings into solution by its decomposing action, its inorganized mineral, vegetable, and animal matter. It acts as a grand magnetic battery, and exhibits its force in reorganizing and reproducing innumerable variety of animal and vegetable forms adapted to their various conditions and positions.

Water is composed of these two classes of atoms, and every chemist knows it to be the medium for chemical action. He also knows that he can exert no influence over that action otherwise than in arranging the materials and bringing them into position to make that action manifest. He knows that given results must follow certain combinations, from a force inherent in the compounded materials. The action as well as the result is spontaneous; but I believe it is not generally known that all such action is magnetic, that the inorganic particles are all magnets, that when such particles are deposited in organized bodies they come under the law of attraction and repulsion, that their atoms are of two distinct classes *both positive* under different conditions which their spontaneous reciprocal action brings into contact, and that that action is known as chemical action. All organic forms are produced by similar action, those *from* the seed and the egg, and the seed and the egg itself. The production of these admits no exception, nor can there be an exception to the operation of this law.

All creations are magnetic; all atoms are magnets; the earth, being composed of atoms, is one great magnet.

Matter in the act of dissolving and reforming through the agency of water throws off particles, in the form of gas, into the atmosphere. In this form the atoms are more free to act than when in their watery solutions; hence when this gaseous material combines with and acts upon other gases or atoms in the atmosphere, we notice more powerful displays of this natural force and action than in the decomposition of solids and liquids. This action may be seen in smoke, fog, clouds, rain, wind, tornadoes, earthquakes, lightning or electricity, the aurora borealis etc., all of which may be demonstrated to be the *effects* and consequences of that atomic magnetic force, the different results being caused by different conditions, variety of combination, and the positions of the material composing the two classes.

Thus the *cause* and *modus operandi* of chemical action or of atomic force may be known; for the nature of matter and its inherent force being ascertained, the cause of such action must be apparent. Illustrative evidence may be drawn from observation of any natural phenomenon.

THO. ROD. FRASER, M.D.

Halifax, Nova Scotia, December 13th 1869.

[We have allowed Dr. Fraser to communicate his ideas on Atomic Force to our readers, simply because we are unwilling to appear discourteous to a distant subscriber. But we cannot permit this philosophic rhapsody to appear in these columns without a note of dissent. Dr. Fraser appears to have avoided the beaten track of science, and to have taken one of those inviting short cuts which lead to error. In his endeavour to account for the origin of things, he seems to follow the method of Aristotle, and some of his conceptions recal the doctrines of the earliest philosophers of Greece. His atomic force must be classed with the ancient *principia*, and his explanation of its *modus operandi* is not adapted to make an impression on a mind that has been schooled to the patient observation and comparison of facts.

> " Wisdom is oftimes nearer when we stoop
> Than when we soar,"

and mindful of this humble truth, the scientific man has long since discarded the wings of speculation.—ED. *C. & D.*]

PATENTS

[The following list has been compiled expressly for the CHEMIST AND DRUGGIST by L. de Fontainemoreau, Patent Agent, 4, South-street, Finsbury, London; 10, Rue de la Fidélité, Paris; and 3, Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following :—

2795. J. Stuart, of Limehouse. Improvements in the treatment of the ores of metals and their products, and in the manufacture of the oxides of the metals, and of the carbonates of the oxides of the metals, and of the metals themselves; also in the manufacture of soda and its carbonates, and of potass and its carbonates. Dated 25th September, 1869.
3335. G. F. Cornelius, of Westminster. Improvements in the manufacture of paint and varnish. Dated 19th November, 1869.
3363. J. Burroughs, of London. Improvements in electro-magnetic machines, and in magnets for the same and for other purposes. Dated 20th November, 1869.
3400. J. Downs, of Kingston-upon-Hull, York. Improved hydraulic presses used for seed-crushing, oil-expressing, and other similar purposes. Dated 24th November, 1869.
3406. B Goddard and W. Finley, both of Stockport, Chester. Improved machinery for pill mass-mixing and pill making, mixing plastic substances, making plaster rolls, and for other similar or analagous purposes. Dated 25th November, 1869.
3417. D. Barker, of Northfleet, Kent. Improvements in the manufacture of varnish and varnish paints. Dated 26th November, 1869.
3428. S. Wyatt, of Plymouth, Devon. Improvements in the preservation of meat, and in the apparatus employed therein. Dated 26th November, 1869.
3472. W. Spence, of London. Improvements in the manufacture of soda crystals. Dated 1st December, 1869.
3494. P. A. S. Langlois and L. S. Thomassin, both of Paris. Improvements in the manufacture of sulphuric acid, and in apparatus connected therewith. Dated 2nd December, 1869,
3505. H. Larkin, of Leighton-road, and W. White, of Hampstead. Improvements in the production of potassium, sodium, and zinc. Dated 3rd December, 1869.
3525. J. B. Spence, of Manchester. Improvements in the manufacture of alum. Dated 6th December, 1869.
3526. J. B. Spence, of Manchester. Improvements in the production of a substance to be used in the manufacture of paper in a similar manner to alum or sulphate of alumina, which substance is also applicable as a mordant in calico printing, and to other manufacturing purposes in which alum or sulphate of alumina is employed. Dated 6th December, 1869.
3561. J. Hamilton and R. Paterson, both of Glasgow. Improvements in collapsable casks or vessels for containing fermentable and aërated beverages. Dated 9th December, 1869.

Letters Patent have been issued for the following :—

1782. A. St. Cyr Radisson, of Lyons, France. Improvements in the treatment of oleine and other fatty matters, for the purpose of transforming them into solid material suitable for the manufacture of candles. Dated 9th June, 1869.
1840. J. T. Masbon, of Paris. Improvements in apparatus for carrying invalid, wounded, sick, and other persons. Dated 15th June, 1869.
1893. M. Olsson, of Barnsbury. Improvements in preserving animal and vegetable substances. Dated 21st June, 1869.
1980. W. Coleman, of London, and S. Turton, of Heaton Norris, Lancaster. Improvements in feeding bottles. Dated 1st July, 1869.
2037. W. Bray, of Stockton, United States of America. Improvements in refrigerators, more especially designed for railway provision carriages. Dated 6th July, 1869.
2054. J. H. Johnson, of London. Improvements in the preparation of meat for preservation, and in the preservation of the same, Dated 7th July, 1869.
2930. J. Wallace, of Belfast. An improved method of, and apparatus for, distilling alcoholic liquors. Dated 8th October, 1869.
3054. J. Scharr, of Leeds. Improvements in the manufacture of liquid soap. Dated 20th October, 1869.
3086. T. Deichmann, of Chester-street, Belgrave-square. Improvements in preserving meat. Dated 23rd October, 1869.
3093. W. R. Lako, of London. Improvements in the manufacture of dry white lead and white lead pigment from metallic lead. Dated 25th October, 1869.

Specifications published during the month :—
Postage 1d. each extra.

1101. P. Headridge. Dentistry. 6d.
1178. G. T. Bousfield. Deodorizing hydrocarbon oils. 8d.
1207. R. J. Ellis and C. L. W. Fitzgerald. Drying animal and vegetable matters. 4d.
1214. M. Andrew. Capsule taps for oil vessels, etc. 8d.
1224. M. Henry. Obtaining pyrophosphate of lime. 4d.
1260. J. Major, W. Wright, and G. H. Jones. Manufacture of white lead. 10d.
1275. G. Engholm. Preserving food. 1s.
1310. H. A. Bonneville. Concentrating the caloric of heated water for bathing. 4d.
1368. R. Fennelly. Cases for conveying fresh meat. 4d.
1370. W. E. Gedge. Carbonic acid gas apparatus for raising liquids, etc. 4d.
1381. E. H. Richmond. Preserving food. 4d.
1388. T. Welton. Applying charcoal for curative and other purposes. 4d.
1398. G. Kent. Refrigerator. 4d.
1402. R. Fennelly. Washing casks. 10d.
1419. H. A. Dufrene. Desiccating and preserving meat, etc. 4d.
1440. W. R. Lake. Saponaceous compound. 4d.

TRADE REPORT.

A SANGUINE financier, it is said, digs a pit for his own fame. In what a multitude of instances has this been verified during the past three years. Since the terrible commercial catastrophes of 1866, how constantly have we been informed in one form of words or another, that things were just going to take a turn, and that we were on the eve of brighter days. And yet how slowly has this turn approached. The country has paid a severe penance for its reckless dash of four or five years ago, and in some quarters the hope so long deferred, seems to have almost sickened the sanguine hearts of those who have so persistently prophecied better days in store, and consequently the chief authorities on trade look forward to 1870 with caution, if not timidity. But—we address ourselves to those who so earnestly look for what they understand to be a revival of business, and we ask whether they know exactly the perils of that which they seek. Confidence in business, to a great extent, is necessary it is true, but who wishes to see a renewal of that blind, mad confidence which characterised 1865 and 1866. It is said that panics recur with almost undeviating regularity about once every nine years. But why should they? Is it not evident that they are the direct results of that overgrowth of confidence which is so carefully fostered, and which we see expand itself gradually from panic to panic with but a year or two's lull immediately following each of the climaces? Let us look the matter straightforwardly in the face and consider whether we are not, as a nation, really more prosperous as we are than if we were again plunging wildly forward with scarcely a breath to spare, or even than if we were getting ourselves ready for such a spirit. The fact is, neither nations, nor companies, nor individuals, ought to attempt to do more business than they can themselves thoroughly superintend. Fortuitous circumstances may contrive to give success for a while, and thus to allure to further extension; but it is no sound policy, and a Nemesis generally follows, and avenges the breaking through of the unwritten code of maxims by which commerce is guided.

It is at least one thing to congratulate ourselves upon that ordinary common sense and justice has been introduced into our law processes, so far as regards bankruptcy. For ten years a system of the most insane confidence in human nature has governed our procedure, and under its influence has grown up a set of anomalies which have been a disgrace and an open scandal to the community. Heartless robberies, by the side of which the deeds of highwaymen were almost lustrous, have been daily committed, and tacitly the law supported them. Beggars whose impudence was their only fortune have revelled in luxuries which belong to other people, and when the inevitable day of exposure has arrived, they have been turned out of society with as much politeness as they were welcomed into it. The fact is, the majority of people require their conscience as well as their intellects made for them, and what the law does not stigmatize as a crime by marked punishment, they will never regard as criminal. Presuming, however, that the new bankruptcy laws are carried out according to their spirit and their letter, this villany will be stopped, and we doubt not the exemplary punishment of a few fraudulent debtors will be found sufficient to mark a distinct era in the advancement of commercial morality.

We have a guide to the estimation of the export trade of the past year in drugs and chemical products in a single line of the Board of Trade Returns which lie before us made up to the eleven months ending Nov. 30th, 1869. We find the declared value of the exports of these to be £533,287 in 1869 against £434,904 in 1868, showing an increase of nearly 25 per cent. This is at least encouraging, and as we have remarked before in these columns, we have every reason to anticipate a steady and continual increase in the export trade of drugs, etc., growing as it must with the growth of our colonies and the increase of our enterprise.

In our monthly report we have less change than usual to indicate in the prices of drugs and chemicals. Opium remains at former quotations, which is an event to be noted. Quinine is higher for English, and firmly held. Another fall in Camphor has justified our anticipations last month. Large quantities of China Camphor are reported as sold at prices not higher than 80s. It was selling at 130s. per cwt. at the commencement of 1869. Citric Acid has advanced considerably, and 2s. 4d. is now refused. Tartaric, although not advanced in price, is very firmly held, and higher quotations may be looked for. Oxalic sells at 7½d. Caustic Soda and Soda Crystals are quiet in the market. There is a fair demand for Saltpetre. Sal Ammoniac is in request, and Bleaching Powder is steady at former rates. Gum Arabic sells freely at extreme rates for best kinds; superior qualities are very scarce. Gamboge is dull and declining, but there has been a brisk trade in Animi, Assafœtida, Ammoniacum, and Myrrh. Best qualities of the latter are much wanted. Saffron is very firm, and Senna, E.I., is in good demand, and not by any means in too great supply. Socotrine Aloes are much wanted. Of other kinds there is plenty offered, except of the finest qualities, which are chiefly sought for. Cardamoms are not sold very freely, but there is a steady demand for Cinnamon and Cassia. Ginger is only moderately inquired after.

OILS.

Olive Oil has stopped in its downward course, and has become dearer, and is now very firm for all descriptions. £58 has been refused for Gioja, £54 paid for Smyrna, ten tuns Tunis sold at £53, and a small quantity of Mogador at £52 10s. Fish oils are almost unchanged. Rape Seed Oil has been in active demand, and is now quiet at an advance of about 30s. over our last quotations. Linseed Oil, too, has become somewhat scarce, and £30 is now refused; £30 5s. has been paid on the spot, £30 15s. for February to March, and £31 January to April. Cocoa-nut Oil has experienced more inquiry. Petroleum has been in better demand, more particularly for high tests, and the market has improved, 1s. 8½d. being now required for S.W. contract oil, and 1s. 9d. being the lowest price for heavy gravity, and 1s. 9½d. to 1s. 10d. for Portland make. Speculative sales of about 1,400 barrels were made for September-December at 1s. 8d. on the Petroleum Association Contract. Turpentine has been in only limited request, and 28s. has been accepted for American spirits.

DRYSALTERIES.

The markets remain unchanged, with a fair amount of business transacted. There is a rather more plentiful supply of Logwood than we have had lately, but the prices are well maintained. Sulphuric Acid, we are informed, is in considerable demand, and may be dearer. There is nothing else to report beyond our quotations in the Price Current.

Subjoined are extracts from the annual reports of commercial firms:—

INDIGO.—(Messrs. Layton and Co.) The consumption of indigo in Europe during the past year has barely reached that of 1868. To importers the article has upon the whole been lucrative. During the first six months the rates here were considerably under those ruling at the auctions in Calcutta, and purchases, upon the whole, showed a sad loss. It was not until the beginning of July, when telegrams reported serious injury to the growing crops in Bengal and Tirhoot by reason of the long drought, and the disasters occasioned by the terrible cyclone of the 10th of that month, that a strong demand, both for investment and consumption, set in, and prices rapidly rose fully 1s. per lb., especially for fine qualities, which have continued to increase in value throughout the autumn, thus enabling importers to realize their purchases in Calcutta at a fair profit. Statistics would lead us to expect a fair and improving business in indigo during the present year. Prices, though high, are not exorbitant, and with peace at home and abroad, money at a low rate, and scanty supplies, we may fairly anticipate a satisfactory result to importers.

SEEDS.—(Messrs. Edwards, Eastty, and Co.) Seed-crushing has not been an exception to the general character of business in 1869, nearly every branch of commerce having had occasion to complain. The working season of 1868-69 —say July to June—proved profitable, but the past six months have disappointed many expectations; the anticipations of a good demand for linseed cakes have not been realized; and the large supplies of Indian corn and other feeding stuffs, coupled with the low prices of wheat, have caused a far smaller consumption than was generally looked for. The year's supply of linseed will be found considerably short of 1868, although a fair average, and proves quite sufficient for our present requirements.

SPANISH AND CALIFORNIAN QUICKSILVER.—(Mr. Samuel Pickering). Imported in 1869, 35,100 bottles; in 1868, 45,900 bottles; in 1867, 29,000 bottles; in 1866, 42,350 bottles; in 1865, 20,550 bottles. Deliveries for Export and Home use.—In 1869, 40,900 bottles; in 1868, 39,900 bottles; in 1867, 41,700 bottles; in 1866, 29,850 bottles; in 1865, 20,050 bottles. Stocks in first hands on 1st January.—In 1870, 15,500 bottles (Spanish); in 1869, 21,300 bottles; in 1868, 15,300 bottles; in 1867, 28,000 bottles; in 1866, 15,500 bottles.

PETROLEUM.—(Messrs. Phillips and Webb). The past twelvemonths' business in refined Pennsylvanian oil has been even more extensive than that of the previous year, and the shipments from the United States in 1868 were beyond all former precedent. It would appear as if the world's consumption of this most brilliant yet economical light had at length overtaken its production on the American continent, for the greatly enhanced rates which have of late ruled failed to stimulate shipments to any important extent. The stocks in the principal consuming countries are much below those of the corresponding date last year, while deliveries continue to be very large. It is to be regretted that the Act of Parliament passed in 1868 should have been so interpreted as to operate seriously against the growth of business in this country; the more so as in the excessively dull times since 1866 the mercantile classes could ill afford to see a great and constantly increasing trade driven to the Continent. Yet there can be no doubt that the effect of legislation was to cause our market to rule constantly higher than neighbouring Continental ports (owing to the fact of our requiring a special article), and, as a consequence, the large export business which was formerly done through London to minor European towns has been diverted to Antwerp, Havre, Marseilles, etc. Of course, too, the consumers were at a disadvantage as compared with the same class in Continental countries where no such "protective" laws exist. The market closes with a decidedly improving appearance. The highest price of the year was reached early in February, the value then being 1s. 11d. to 2s.; the lowest, 1s. 5d., in July. Coal oil has fluctuated with the American article and in about the same ratio. Prices 1s. 5d. to 1s. 7½d., according to quality.

Monthly Price Current.

[The prices quoted in the following list are those actually obtained in Mincing-lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.]

	1870. January.					1869. January.				
	s.	d.	to	s.	d.	s.	d.	to	s.	d.
CHEMICALS.										
ACIDS—										
Acetic per lb.	0	4	..	0	0	0	4	..	0	0
Citric per lb.	2	5	..	0	0	2	9	..	2	10
Nitric ,,	0	5	..	0	5½	0	5	..	0	5½
Oxalic ,,	0	7½	..	0	0	0	8	..	0	0
Sulphuric ,,	0	0¾	..	0	1	0	0¾	..	0	1
Tartaric crystal ,,	1	2	..	0	0	1	2	..	0	0
powdered ,,	1	2½	..	0	0	1	2½	..	0	0
ANTIMONY ore per ton	320	0	..	360	0	280	0	..	300	0
crude per cwt	35	0	..	0	0	23	0	..	26	0
regulus ,,	65	0	..	0	0	48	0	..	50	0
star ,,	65	0	..	70	0	48	0	..	50	0
ARSENIC, lump ,,	16	0	..	16	6	16	0	..	16	6
powder ,,	7	3	..	7	6	7	6	..	8	0
BRIMSTONE, rough per ton	160	0	..	0	0	160	0	..	165	0
roll per cwt	11	0	..	0	0	12	0	..	0	0
flour ,,	13	0	..	13	6	14	0	..	14	6
IODINE, dry per oz.	0	9	..	0	9½	0	9¾	..	0	10
IVORY BLACK, dry per cwt.	0	0	..	0	0	0	0	..	0	0
MAGNESIA, calcined per lb.	1	2	..	0	0	1	6	..	1	8
MERCURY per bottle	137	0	..	138	0	137	6	..	0	0
MINIUM, red per cwt.	20	9	..	21	0	20	9	..	21	0
orange ,,	31	6	..	32	6	31	9	..	32	6
PRECIPITATE, red per lb.	2	6	..	0	0	2	6	..	0	0
white ,,	2	5	..	0	0	2	5	..	0	0
PRUSSIAN BLUE ,,	0	0	..	0	0	1	0	..	1	10
SALTS—										
Alum per ton	145	0	..	155	0	150	0	..	155	0
powder ,,	165	0	..	170	0	170	0	..	175	0
Ammonia:										
Carbonate per lb.	0	5¾	..	0	6	0	5¾	..	0	6
Hydrochlorate, crude, white per ton	480	0	..	560	0	500	0	..	510	0
British (*see* Sal Ammoniac)										
Sulphate per ton	340	0	..	360	0	320	0	..	335	0
Argol, Cape per cwt	65	0	..	78	6	70	0	..	82	6
France ,,	45	0	..	58	0	45	0	..	60	0
Oporto, red ,,	22	0	..	24	0	25	0	..	27	0
Sicily ,,	32	0	..	40	0	45	0	..	50	0
Naples, white ,,	55	0	..	65	0	55	0	..	65	0
Florence, white	0	0	..	0	0	70	0	..	75	0
,, red ,,	0	0	..	0	0	60	0	..	65	0
Bologna, white ,,	0	0	..	0	0	0	0	..	0	0
Ashes (*see* Potash and Soda)										
Bleaching powd per cwt.	8	6	..	8	9	10	9	..	11	0
Borax, crude ,,	25	0	..	40	0	25	0	..	35	0
(Tincal) ,,	55	0	..	65	0	30	0	..	52	0
British refnd. ,,	69	0	..	70	0	70	0	..	0	0
Calomel per lb.	2	5	..	0	0	2	5	..	0	0
Copper:										
Sulphate per cwt.	23	6	..	24	0	24	0	..	25	0
Copperas, green per ton	52	6	..	60	0	55	0	..	60	0
Corrosive Sublimate p. lb.	1	11	..	0	0	1	11	..	0	0
Cr. Tartar, French, p. cwt.	82	0	..	0	0	83	0	..	84	0
Venetian grey ,,	83	0	..	0	0	0	0	..	0	0
brown ,,	0	0	..	0	0	0	0	..	0	0
Epsom Salts per cwt.	7	6	..	8	0	8	0	..	8	6
Glauber Salts ,,	4	6	..	6	0	5	6	..	6	0
Lime:										
Acetate, white, per cwt.	12	6	..	23	0	12	6	..	22	0
Magnesia:										
Carbonate ,,	42	6	..	0	0	42	6	..	0	0
Potash:										
Bichromate per lb.	0	5⅛	..	0	5⅜	0	5	..	0	0
Carbonate:										
Potashes, Canada, 1st sort per cwt.	31	6	..	31	0	33	0	..	0	0
Pearlashes, Canada, 1st sort per cwt.	32	6	..	33	0	33	0	..	0	0
Chlorate per lb.	0	10½	..	0	0	1	0½	..	1	1
Prussiate per lb.	0	11	..	0	0	1	0	..	0	0
red ,,	1	8½	..	1	10	1	9½	..	1	10
Tartrate (*see* Argol and Cream of Tartar)										
Potassium:										
Chloride per cwt.	8	0	..	0	0	8	0	..	8	3
Iodide per lb.	11	0	..	0	0	12	0	..	0	0
Quinine:										
Sulphate, British, in bottles per oz.	5	10	..	6	0	4	11	..	0	0
Sulphate, French ,,	5	6	..	0	0	4	6	.	0	0
Sal Acetos per lb.	0	10	..	0	0	0	10½	..	0	0
Sal Ammoniac, Brit. cwt.	39	0	..	40	0	34	0	..	35	0
Saltpetre:										
Bengal, 6 per cent. or under per cwt.	22	6	..	22	9	24	3	..	24	6
Bengal, over 6 per cent. per cwt.	20	6	..	22	0	23	9	..	24	6
Madras ,,	20	0	..	21	0	0	0	..	24	0
Bomb & Kurrachee p. cwt.	0	0	to	0	0	0	0	..	0	0
European ,,	25	0	..	26	0	0	0	..	0	0
British, refined ,,	25	6	..	26	6	25	6	..	29	0
Soda: Bicarbonate, p. cwt.	9	9	..	0	0	11	6	..	0	0
Carbonate:										
Soda Ash per deg.	0	1¾	..	0	0	0	1⅞	..	0	0
Soda Crystals per ton	75	0	..	0	0	82	6	..	85	0

	1870.					1869.				
	s.	d.		s.	d.	s.	d.		s.	d.
Soda:										
Hyposulphite per cwt.	13	6	..	14	0	16	0	..	22	0
Nitrate ,,	16	0	..	16	3	15	3	..	15	6
SUGAR OF LEAD, White, cwt.	39	0	..	40	0	40	0	..	40	0
Brown ,,	29	0	..	30	0	29	0	..	30	0
SULPHUR (*see* Brimstone										
VERDIGRIS per lb.	1	0	..	1	2	0	11		1	0
VERMILION, English per lb.	2	6	.	3	3	2	6	..	3	0
China ,,	2	10	..	0	0	2	7	..	2	8
DRUGS.										
ALOES, Hepatic per cwt.	60	0	..	180	0	00	0	..	200	0
Socotrine ,,	100	0	..	220	0	140	0	..	280	0
Cape, good ,,	28	0	..	30	0	20	0	..	31	0
Inferior ,,	17	0	..	27	0	16	0	..	28	0
Barbadoes ,,	80	0	..	220	0	70	0	..	100	0
AMBERGRIS, grey oz.	27	6	..	30	0	30	0	..	35	0
BALSAMS—										
Canada per lb.	1	2	..	0	0	1	3	..	0	0
Capivi ,,	1	10	..	1	11	1	9	..	1	10
Peru ,,	10	3	..	10	6	10	6	..	11	0
Tolu ,,	2	2	..	2	3	2	6	..	0	0
BARKS—										
Canella alba per cwt.	20	0	..	34	0	35	0	..	50	0
Cascarilla ,,	22	0	..	34	0	23	0	..	35	0
Peru, crown & grey per lb.	0	10	..	2	3	0	9	..	1	8
Calisaya, flat ,,	3	9	..	3	11	2	8	..	3	0
quill ,,	3	0	..	3	10	2	6	..	2	9
Carthagena ,,	1	0	..	1	11	0	9	..	1	8
Pitayo ,,	0	6	..	1	5	0	7	..	1	6
Red ,,	1	6	..	7	0	1	0	..	5	6
Bucho Leaves ,,	0	3½	..	0	6	0	4	..	0	9
CAMPHOR, China per cwt.	80	0	..	82	6	130	0	..	132	6
Japan ,,	82	6	..	83	0	132	6	..	0	0
Refin Eng. per lb.	1	3	..	0	0	1	9½	..	2	0
CANTHARIDES ,,	3	0	..	3	2	2	2	..	2	3
CHAMOMILE FLOWERS p. cwt	40	0	..	72	6	55	0	..	90	0
CASTOREUM per lb.	4	0	..	32	0	5	0	..	32	0
DRAGON'S BLOOD, reed p. cwt.	100	0	..	160	0	100	0	..	200	0
lump ,,	100	0	..	200	0	100	0	..	220	0
FRUITS AND SEEDS (*see also* Seeds *and* Spices.										
Anise, China Star pr cwt.	112	6	..	115	0	95	0	..	100	0
German, &c. ,,	25	0	..	38	0	32	0	..	40	0
Beans, Tonquin per lb.	1	0	..	1	6	1	2	..	1	6
Cardamoms, Malabar good ,,	7	10	..	8	6	10	6	..	10	6
inferior ,,	5	9	..	7	0	6	0	..	9	0
Madras ,,	4	6	..	8	4	5	9	..	10	3
Ceylon ,,	2	6	..	2	10	2	10	..	3	0
Corozo Nuts per cwt.	14	0	..	18	0	12	0	..	16	0
Cassia Fistula ,,	16	0	..	35	0	15	0	..	28	0
Castor Seeds ,,	10	6	..	12	0	11	0	..	12	0
Cocculus Indicus ,,	21	0	..	22	0	23	0	..	26	0
Colocynth, apple per lb.	0	4¾	..	0	8	0	6	..	0	10
Croton Seeds per cwt.	46	0	..	55	0	85	0	..	92	0
Cubebs ,,	32	0	..	35	0	41	0	..	0	0
Cummin ,,	90	0	..	100	0	40	0	..	50	0
Dividivi ,,	10	6	..	12	6	10	6	..	12	6
Fenugreek ,,	12	0	..	17	0	11	0	..	16	0
Guinea Grains ,,	36	0	..	0	0	38	0	..	0	0
Juniper Berries ,,	7	6	..	8	6	7	0	..	8	0
Myrobalans ,,	7	6	..	14	6	11	0	..	17	0
Nux Vomica ,,	11	0	..	14	0	12	0	..	15	0
Tamarinds, East India ,,	9	0	..	14	0	30	0	..	32	0
West India, new ,,	12	0	..	22	0	16	0	..	30	0
Vanilla, large per lb.	22	0	..	30	0	10	0	..	16	0
inferior ,,	12	0	..	21	0	4	0	..	9	0
Wormseed per cwt.	35	0	..	0	0	25	0	..	30	0
GINGER, Preserved, in bond (duty 1d. per lb.) per lb.	0	6	..	0	9	0	6	..	0	10
GUMS (*see separate list*)										
HONEY, Narbonne ,,	30	0	..	47	0	0	0	..	0	0
Cuba ,,	22	0	..	36	0	21	0	..	36	0
Jamaica ,,	31	0	..	55	0	25	0	..	45	0
IPECACUANHA ,,	5	6	..	6	0	6	0	..	6	3
ISINGLASS, Brazil ,,	2	7	..	4	8	3	3	..	4	4
Tongue sort ,,	3	1	..	4	10	3	11	..	5	5
East India ,,	2	0	..	4	0	2	3	..	4	2
West India ,,	3	10	..	4	1	4	0	..	4	4
Russ. long staple	5	0	..	8	0	5	6	..	7	0
,, leaf ,,	3	0	..	5	9	0	0	..	0	0
,, Simovia	1	6	..	2	6	1	6	..	2	6
JALAP, good ,,	3	2	..	3	10	3	0	..	4	3
infer. & stems ,,	0	6	..	3	0	0	9	..	3	6
LEMON JUICE per degree	0	1	..	0	1⅛	0	1	..	0	1⅛
LIQUORICE, Spanish per cwt.	60	0	..	65	0	63	0	..	68	0
Italian ,,	48	0	..	63	0	48	0	..	67	0
MANNA, flaky per lb.	3	6	..	4	6	3	0	..	3	6
small ,,	2	0	..	2	6	1	6	..	1	9
MUSK per oz.	17	0	..	33	0	22	0	..	34	0
OILS (*see also separate List*)										
Almond, expressed per lb.	1	3	..	0	0	1	3	..	0	0
Castor, 1st pale ,,	0	5	..	0	0	0	6½	..	0	6½
second ,,	0	4¼	..	0	4¾	0	5¼	..	0	6
infer. & dark ,,	0	4¼	..	0	0	0	4¾	..	0	5
Bombay (in casks)	0	4	..	0	0	0	4½	..	0	0
Cod Liver per gall.	5	0	..	6	3	4	0	..	6	6
Croton per oz.	0	3	..	0	4	0	3	..	0	4
Essential Oils:										
Almond per lb.	42	0	..	0	0	40	0	..	0	0
Anise-seed per lb.	9	0	..	9	2	0	9	..	10	0
Bay per cwt.	65	0	..	70	0	75	0	..	0	0
Bergamot per lb.	8	0	..	14	0	12	0	..	23	0
Cajeput, (in bond) per oz.	0	1¾	..	0	2	0	1¾	..	0	2
Caraway per lb.	5	6	..	6	3	5	0	..	6	0
Cassia ,,	5	4	..	5	6	5	9	..	0	0
Cinnamon per oz.	1	0	..	4	6	1	0	..	4	0

	1870.		1869.	
Essential Oils, *continued:*—	s. d.	s. d.	s. d.	s. d.
Cinnamon-leaf ..per oz.	0 4 ..	0 0	0 6 ..	0 0
Citronelle ...... ,,	0 2½ ..	0 2⅜	0 2¾ ..	0 2⅞
fine.... ,,	0 3 ..	0 8	0 3½ ..	0 0
Clove............per lb.	2 5 ..	2 6	2 6 ..	0 0
Juniper .... ,,	1 9 ..	2 0	1 9 ..	2 0
Lavender........ ,,	3 0 ..	4 3	2 9 ..	3 9
Lemon.......... ,,	5 0 ..	7 0	3 6 ..	6 0
Lemongrass ....per oz.	0 4 ..	0 4½	0 4½ ..	0 4¾
Neroli .... ,,	0 5 ..	0 6	0 0 ..	0 0
Nutmeg .... ,,	0 4½ ..	0 10	0 4 ..	0 0
Orange..........per lb.	5 0 ..	7 0	5 0 ..	7 0
Otto of Roses....per oz.	13 0 ..	20 0	15 0 ..	20 0
Peppermint:				
American ....per lb.	18 6 ..	15 0	19 0 ..	20 6
English ...... ,,	32 0 ..	42 0	33 0 ..	43 0
Rosemary ...... ,,	1 9 ..	2 0	1 9 ..	2 0
Sassafras .... ,,	4 0 ..	4 6	3 6 ..	4 0
Spearmint ...... ,,	4 0 ..	16 0	12 0 ..	24 0
Thyme.......... ,,	1 10 ..	2 0	1 10 ..	4 0
Mace, expressed .. per oz.	0 1 ..	0 2½	0 0¾ ..	0 2½
Opium, Turkey ...... per lb.	31 0 ..	33 0	45 0 ..	49 0
inferior ...... ,,	23 0 ..	29 0	0 0 ..	0 0
Quassia (bitter wood) per ton	140 0 ..	150 0	120 0 ..	130 0
Rhubarb, China, good and fine ....per lb.	4 6 ..	8 0	5 3 ..	9 0
Good, mid. to ord. ,,	0 8 ..	4 3	1 3 ..	4 9
Dutch trimmed ,,	9 6 ..	10 0	10 0 ..	12 0
Russian .... ,,	0 0 ..	0 0	9 0 ..	10 0
ROOTS—Calumba..per cwt.	30 0 ..	40 0	27 0 ..	45 0
China .... ,,	30 0 ..	40 0	30 0 ..	40 0
Galangal .... ,,	17 0 ..	22 0	17 0 ..	19 0
Gentian .... ,,	19 0 ..	20 0	16 0 ..	0 0
Hellebore ...... ,,	22 0 ..	30 0	22 0 ..	30 0
Orris............ ,,	38 0 ..	44 0	38 0 ..	42 0
Pellitory .... ,,	58 0 ..	60 0	53 0 ..	60 0
Pink..............per lb.	0 7 ..	0 10	0 7 ..	0 9
Rhatany .... ,,	0 5 ..	0 10	0 6 ..	0 10
Senecka............ ,,	1 9 ..	0 0	1 6 ..	0 0
Snake .... ,,	1 2 ..	0 0	1 3 ..	0 0
Saffron, Spanish .. ,,	32 0 ..	40 0	28 0 ..	34 6
Salep ....per cwt.	110 0 ..	0 0	100 0 ..	120 0
Sarsaparilla, Lima per lb.	0 6 ..	0 7	0 0 ..	0 0
Para .... ,,	1 0 ..	1 3	1 0 ..	1 3
Honduras .... ,,	1 2 ..	1 6	1 0 ..	1 7
Jamaica .... ,,	1 11 ..	2 6	1 3 ..	1 11
Sassafras ....per cwt.	0 0 ..	0 0	15 0 ..	0 0
Scammony, Virgin ..per lb.	28 0 ..	32 0	28 0 ..	35 0
second & ordinary ,,	10 0 ..	23 0	10 0 ..	23 0
Senna, Bombay .... ,,	0 3½ ..	0 6	0 3 ..	0 5½
Tinnivelly .... ,,	0 2 ..	1 0	0 2 ..	0 10
Alexandria........ ,,	0 4 ..	1 6	0 6 ..	0 11½
Spermaceti, refined.. ,,	1 6 ..	1 7	1 5 ..	0 0
American .... ,,	1 6 ..	0 0	1 4 ..	1 5
Squill.............. ,,	0 1½ ..	0 2½	0 1 ..	0 2½

GUMS.

	1870.		1869.	
Ammoniaci drop ..per cwt.	210 0 ..	273 0	220 0 ..	280 0
lump .. ,,	120 0 ..	250 0	120 0 ..	160 0
Animi, fine washed ,,	310 0 ..	350 0	230 0 ..	260 0
bold scraped ,,	240 0 ..	300 0	190 0 ..	215 0
sorts ...... ,,	100 0 ..	200 0	110 0 ..	170 0
dark ...... ,,	80 0 ..	100 0	0 0 ..	100 0
Arabic, E. I., fine pale picked .. ,,	77 0 ..	82 0	80 0 ..	83 0
srts, gd. to fin ,,	65 0 .	76 0	80 0 ..	100 0
garblings.. ,,	40 0 ..	60 0	45 0 ..	55 0
Turkey, pick. gd to fin. ,,	170 0 ..	210 0	170 0 ..	220 0
second & inf. ,,	90 0 ..	160 0	85 0 ..	160 0
in sorts .. ,,	75 0 ..	100 0	70 0 ..	93 0
Gedda.... ,,	38 0 ..	44 0	48 0 ..	53 0
Barbary, white .. ,,	73 0 ..	76 0	70 0 ..	80 0
brown .. ,,	70 0 ..	75 0	70 0 ..	77 0
Australian ...... ,,	25 0 ..	50 0	31 0 ..	38 0
Assafœtida, com. to gd ,,	40 0 ..	0 0	60 0 ..	100 0
Benjamin, 1st qual. ,,	280 0 ..	460 0	860 0 ..	680 0
2nd ,, ,,	140 0 ..	220 0	140 0 ..	240 0
3rd ,, ,,	60 0 ..	115 0	50 0 ..	110 0
Copal, Angola red ,,	100 0 ..	120 0	70 0 ..	0 0
Benguela .. ,,	100 0 ..	110 0	80 0 ..	95 0
Sierra Leone..per lb.	0 4 ..	1 3	0 6 ..	1 3
Manilla ....per cwt.	32 0 ..	55 0	30 0 ..	45 0
Dammar, pale .... ,,	87 0 ..	95 0	80 0 ..	95 0
Euphorbium ...... ,,	13 0 ..	14 0	18 0 ..	20 0
Galbanum .... ,,	160 0 ..	260 0	180 0 ..	220 0
Gamboge, pckd. pipe ,,	290 0 ..	330 0	320 0 ..	380 0
Guaiacum ....per lb.	0 9 ..	1 6	0 8 ..	1 4
Kino..............per cwt.	60 0 ..	140 0	60 0 ..	120 0
Kowrie, rough.... ,,	50 0 ..	60 0	36 0 ..	47 0
scraped .. ,,	63 0 ..	110 0	50 0 ..	100 0
Mastic, picked......per lb.	5 6 ..	6 0	5 0 ..	7 0
Myrrh, gd. & fine per cwt.	180 0 ..	250 0	200 0 ..	280 0
sorts......	90 0 ..	170 0	80 0 ..	100 0
Olibanum, p. sorts	79 0 ..	85 0	75 0 ..	83 0
amber & ylw.	70 0 ..	77 0	64 0 ..	75 0
garblings .... ,,	25 0 ..	50 0	25 0 ..	45 0
Senegal ....per cwt.	83 0 ..	95 0	78 0 ..	85 0
Sandarac .... ,,	71 0 ..	102 0	80 0 ..	105 0
Thus.............. ,,	13 0 ..	14 0	13 0 ..	14 0
Tragacanth, leaf.. ,,	220 0 ..	380 0	220 0 ..	390 0
in sorts ,,	115 0 ..	210 0	140 0 ..	210 0

OILS.

	1870.		1869.	
Seal, pale..........per tun	£41 0 ..	0 0	£36 0 ..	0 0
yellow to tinged ,,	37 0 ..	40 0	33 0 ..	35 0
brown........ ,,	35 0 ..	36 0	32 0 ..	0 0
Sperm, body ...... ,,	86 0 ..	87 0	92 0 ..	0 0
headmatter ,,	86 0 ..	0 0	0 0 ..	0 0
Oils, *continued:*—	£ s.	£ s.	£ s.	£ s.
Cod................ ,,	41 0 ..	0 0	39 10 ..	40 0
Whale, South Sea, pale ,,	40 0 ..	0 0	36 0 ..	0 0
yellow ,,	38 0 ..	39 0	35 0 ..	0 0
brown ,,	35 0 ..	0 0	33 0 ..	0 0
East India, Fish ,,	32 0 ..	0 0	32 0 ..	0 0
Olive, Galipoli ...... ,,	59 0 ..	0 0	57 0 ..	0 0
Trieste ...... ,,	58 0 ..	0 0	51 0 ..	0 0
Levant ...... ,,	57 10 ..	0 0	51 0 ..	0 0
Mogador...... ,,	52 10 ..	53 0	50 0 ..	0 0
Spanish ...... ,,	56 10 ..	57 10	55 0 ..	0 0
Sicily .... ,,	57 0 ..	0 0	54 0 ..	0 0
Cocoanut, Cochin.. per ton	43 0 ..	43 0	50 0 ..	0 0
Ceylon.. ,,	41 0 ..	41 10	47 0 ..	0 0
Sydney ,,	34 0 ..	39 0	43 0 ..	47 0
Ground Nut and Gingelly:				
Bombay	0 0 ..	0 0	0 0 ..	0 0
Madras..................	40 0 ..	0 0	37 10 ..	38 0
Palm, fine	40 10 ..	0 0	42 0 ..	42 10
Linseed	30 5 ..	0 0	27 10 ..	0 0
Rapeseed, English, pale ..	41 0 ..	0 0	33 0 ..	0 0
brown........	39 0 ..	0 0	31 0 ..	0 0
Foreign pale....	42 10 ..	43 0	33 10 ..	34 0
brown........	39 10 ..	0 0	31 0 ..	0 0
Cottonseed	29 0 ..	36 6	25 0 ..	31 0
Lard......................	76 0 ..	0 0	67 0 ..	68 0
Tallow	35 0 ..	0 0	37 0 ..	38 0
Turpentine, American, cks.	29 0 ..	0 0	25 6 ..	26 0
Petroleum, Crude	14 0 ..	0 0	12 0 ..	12 10
	s. d.	s. d.	s. d.	s. d.
refined, per gall.	1 8½ ..	1 9½	1 8 ..	0 0
Spirit ,,	1 4 ..	1 5	0 3 ..	0 9

SEEDS.

	1870.		1869.	
	s. d.	s. d.	s. d.	s. d.
Canary ....per qr.	50 0 ..	60 0	60 0 ..	63 0
Caraway, English per cwt.	43 0 ..	52 0	0 0 ..	0 0
German, &c.....	23 0 ..	45 0	32 0 ..	44 0
Coriander	20 0 ..	22 0	18 0 ..	19 0
Hemp ....per qr.	42 0 ..	44 0	42 0 ..	44 0
Linseed, English per qr...	0 0 ..	0 0	65 0 ..	72 0
Black Sea & Azof	56 0 ..	0 0	56 0 ..	0 0
Calcutta ,,	59 0 ..	0 0	56 6 ..	0 0
Bombay ,,	60 0 ..	0 0	53 0 ..	0 0
St. Petrsbrg. ,,	53 0 ..	54 0	54 0 ..	55 0
Mustard, brown..per bshl.	8 0 ..	10 6	0 0 ..	0 0
white.. ,,	7 0 ..	12 0	12 0 ..	14 0
Poppy, East India per qr.	54 6 ..	55 0	61 6 ..	0 0

SPICES.

	1870.		1869.	
Cassia Lignea ....per cwt.	120 0 ..	180 0	0 0 ..	0 0
Vera .... ,,	45 0 ..	85 0	60 0 ..	84 0
Buds .... ,,	150 0 ..	175 0	140 0 ..	150 0
Cinnamon, Ceylon,				
1st quality ....per lb.	2 0 ..	3 8	2 4 ..	3 4
2nd do. ...... ,,	1 8 ..	3 7	1 11 ..	2 11
3rd do. ...... ,,	1 6 ..	3 3	1 8 ..	2 6
Tellicherry ...... ,,	1 0 ..	0 0	0 0 ..	0 0
Cloves, Penang.... ,,	0 10 ..	1 0	0 10½ ..	0 11
Amboyna........ ,,	0 4½ ..	0 5¾	0 5 ..	0 6
Zanzibar .... ,,	0 2⅞ ..	0 3	0 3½ ..	0 4
Ginger, Jam., fine per cwt.	110 0 ..	200 0	90 0 ..	195 0
Ord. to good .. ,,	36 0 ..	100 0	35 0 ..	80 0
African.......... ,,	25 0 ..	0 0	27 6 ..	0 0
Bengal .... ,,	24 0 ..	25 0	30 0 ..	31 0
Malabar .... ,,	0 0 ..	0 0	0 0 ..	0 0
Cochin .... ,,	32 0 ..	110 0	34 0 ..	120 0
Pepper, Blk. Malabar, per lb.	0 5 ..	0 5¾	0 4½ ..	0 5
White, Tellicherry ,,	0 9 ..	1 5	0 10 ..	1 6
Cayenne .... ,,	0 7 ..	0 11	0 4 ..	0 8½
Mace, 1st quality ..per lb.	3 3 ..	4 0	2 6 ..	3 4
2nd and inferior.. ,,	2 6 ..	3 2	1 6 ..	2 4
Nutmegs, 78 to 60 to lb.	2 8 ..	4 0	2 1 ..	4 3
90 to 80 ,,	2 2 ..	2 7	1 7 ..	2 2
132 to 95 ,,	1 7 ..	2 1	1 2 ..	1 6

VARIOUS PRODUCTS.

	1870.		1869.	
COCHINEAL—				
Honduras, black ..per lb.	2 8 ..	3 10	3 2 ..	4 5
,, silver .. ,,	2 7 ..	2 11	2 9 ..	3 7
,, pasty .. ,,	2 0 ..	2 6	1 4 ..	2 7
Mexican, black .... ,,	2 8 ..	3 0	3 1 ..	3 3
,, silver .... ,,	2 7 ..	2 8	2 10 ..	0 0
Teneriffe, black....	2 9 ..	4 0	3 0 ..	5 0
,, silver.... ,,	2 7 ..	2 9	2 11 ..	3 4
PUMICE STONE ..per ton	120 0 ..	160 0	120 0 ..	160 0
SOAP, Castile ....per cwt.	35 0 ..	0 0	38 0 ..	39 0
SPONGE, Turk. fin pkd pr lb.	12 0 ..	16 0	12 0 ..	14 0
Fair to good .. ,,	4 0 ..	11 0	5 0 ..	11 0
Ordinary...... ,,	1 0 ..	3 6	2 0 ..	4 0
Bahama............ ..	0 6 ..	2 6	0 9 ..	2 6
TERRA JAPONICA—				
Gambier .. per cwt.	17 0 ..	17 6	16 9 ..	17 3
Free cubes ,,	19 6 ..	22 0	26 6 ..	25 0
Cutch ..... ,,	24 0 ..	25 0	33 0 ..	36 0
WOOD, Dye, Bar ..per ton	£4 0 ..	£4 10	£4 15 ..	£5 0
Brazil .... ,,	0 0 ..	0 0	0 0 ..	0 0
Braziletto .... ,,	0 0 ..	0 0	0 0 ..	0 0
Cam .... ,,	26 0 ..	30 0	30 0 ..	36 0
Fustic, Cuba...... ,,	7 15 ..	3 10	3 0 ..	9 5
Jamaica .... ,,	4 10 ..	5 10	6 10 ..	7 6
Savanilla........ ,,	0 0 ..	0 0	6 0 ..	6 6
Logwood, Campeachy ,,	9 10 ..	10 10	9 0 ..	10 0
Honduras ...... ,,	5 15 ..	0 0	4 15 ..	5 0
St. Domingo .... ,,	5 10 ..	6 10	4 10 ..	4 15
Jamaica .... ,,	5 0 ..	0 0	4 15 ..	4 17
Lima, first pile.... ,,	12 0 ..	0 0	18 0 ..	9 0
Red Sanders...... ,,	7 15 ..	0 0	7 0 ..	7 10
Sapan, Bimas, &c. ,,	7 0 ..	9 10	10 0 ..	13 0